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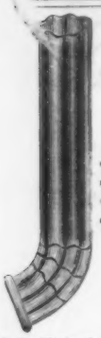

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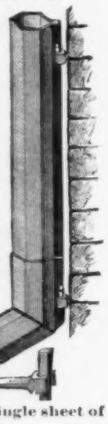

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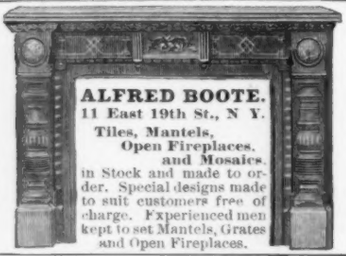

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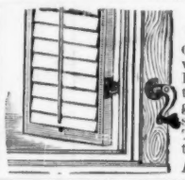

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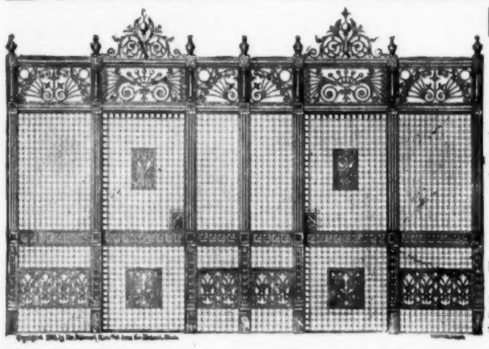

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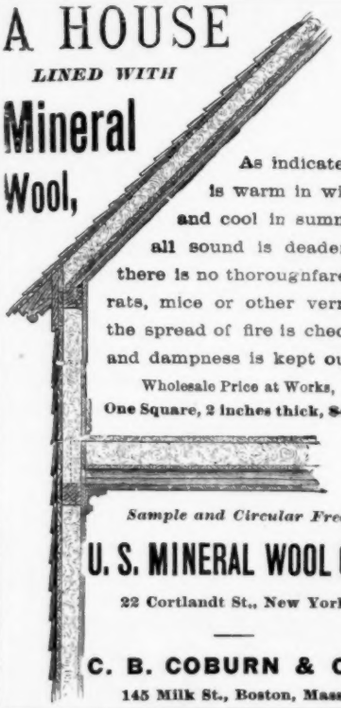
Mineral Wool,



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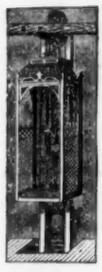

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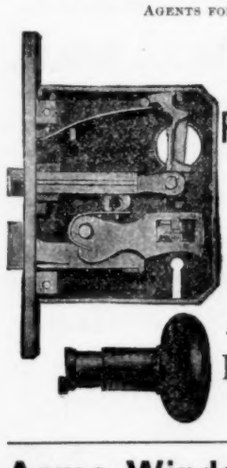

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WIRE LATHING possesses the following qualities:
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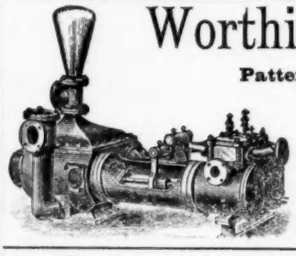

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BRICK.—₱ M.	New York. (*Wholesale Prices.*)	Boston. (*Prices to Builders and Contractors.*)	Chicago.	Philadelphia
Common: *Cargo afloat.*				
Pale	$3 00 @ $3 50	Eastern 7 00 @ 7 50	Building Brick 6 00 @ 7 00	Hard @ 8 00
Jersey	4 50 @ 5 50	Bay State Hard 9 00		Salmon @ 6 00
Long Island	@	Domestic Com. 8 00 @ 9 00	Indiana Pressd 16 00 @ 28 00	Stretchers @ 11 00
Up River	5 00 @ 5 75	Domestic Face 19 00 @ 20 00	St. Louis Fronts @ 27 00	Pressed 20 00 @ 23 00
Haverstraw Bay	5 75 @ 6 00	Philadelphia 40 00 @ 45 00	——	End Headers, all colors @ 65 00
" 1st	6 00 @ 6 50	Phila. mould 50 00 @ 80 00	——	Edge & End all colors @ 85 00
Hollow	@ 13 00		22 00 @ 29 00	
Fronts:			65 00 @ 350 00	
Croton, Brown	12 00 @ 13 00	Glens Falls 25 00 @ 26 00	@ 50 00	
" dark	12 00 @ 14 00		——	
" red	12 00 @ 14 00	Glens Falls Mould. 30 00 @ 35 00	@ 45 00	
Chicago pressed			38 00 @	
Chicago Moulded			25 00 @	
Baltimore	37 00 @ 41 00		60 00 @ 100 00	
Glens Falls — white	30 00 @ 35 00		30 @	
Philadelphia	24 00 @ 25 00		35 @	
Trenton	24 00 @ 25 00		55 00 @ 65 00	
Milwaukee				
Moulded:				
Clark's Glens Falls — Red	25 00 @ 27 00			
" — White	30 00 @ 35 00			
White " Mold,	45 00 @ 60 00	35 00 @ 40 00 / 45 00 @ 60 00		
Enamelled: *Imp.*				
Enamelled (edge.)	85 00 @ 100 00	@	@ 100 00	Dom. @ 65
Enamelled (edge and end)	90 00 @ 115 00	@	@ 120 00	@ 85
CEMENT, LIME, etc.—(₱ *cask.*)				
Rosendale Cement	90 @ 1 00	@ 1 40	*Not Sold.*	1 50 @ 1 75
Utica, Akron, Buffalo, Louisville, Milwaukee	*Not sold.*	*Not sold.*	1 00 @ 1 25	*Not sold.*
Portland, English (Gibbs)	2 50 @ 3 10	@ 3 00	3 00 @ 3 25	@ 3 50
" " (K. B. & S.)	2 75 @ 3 10		3 25 @ 3 50	@ 3 25
" " (Burham)	2 50 @ 2 80		3 15 @ 3 35	@ 3 00
" " (White's)	2 65 @ 3 00			
" German (Alsen)	2 50 @ 3 00	3 00 @ 3 50	3 15 @ 3 35	@ 25
" " (Fewer)	2 45 @ 2 70	3 15 @ 3 35	3 15 @ 3 35	
" " (Vorwohler)	2 50 @ 3 25		3 00 @ 3 25	
" " (Dyckerhoff)	2 75 @ 3 15	3 00 @ 3 50	3 25 @ 3 50	3 00 @ 3 2
" " (Lagerdofer)	@ 2 70	*Not sold.*	*Not sold.*	*Not sold.*
" " (Hanover)	2 50 @ 3 00		3 15 @ 3 35	2 50 @ 3 00
" French (Lafarge)	3 50 @ 4 50	*Not sold.*	3 75 @ 4 25	4 50 @
" American (Saylor's)	2 15 @ 2 30	2 15 @ 2 50	2 75 @ 3 00	2 50 @ 3 00
Selenitic		1 65	*Not sold.*	
Roman	2 75 @ 3 00	@ 3 20	2 75 @ 3 25	3 50 @ 3 75
Keene's coarse	5 00 @ 6 50	@ 7 50	8 00 @ 9 00	6 50 @ 7 00
" superfine	8 75 @ 11 00	@ 11 50	12 00 @ 13 00	11 50 @ 12 00
Lime:				
Lime of Teil	@ 5 00		*Not sold.*	
Hydraulic Lime	@ 1 45	@ 145		
Chicago Lime in bulk			65 @ 75	White Mash 1 25 @ 150
Wisconsin "			75 @ 85	1 00 @ 1 00
Rockland and Rockport, (Com.)	@ 1 00	@ 1 15	*Not sold.*	
Rockland and Rockport, finish	@ 1 20	@ 1 20	*Not sold.*	
State, com. cargo rates (nom.)	@ 90	*Not sold.*	*Not sold.*	*Not sold.*
State, finishing "	@ 1 10	*Not sold.*	*Not sold.*	*Not sold.*
Plaster of Paris (calcined.)	@ 1 25	1 65 @ 1 90	@ 1 75	2 00 @ 2 25
" (casting)	@ 1 35	@ 2 25	@ 1 75	2 25 @ 2 50
Hair (Cattle) ₱ *bush.*	21 @ 25	@ 30	20 @ 25	20 @ 25
" (Goat)	30 @ 35	@ 30	35 @ 40	28 @ 33
Sand, ₱ *load*	1 00 @ 1 25	@ 1 50	100 @ 1 25	@ 1 50
STONE. (₱ *cubic foot, rough.*)				
Granite: (*Maine*)		@ 60		75 @ 2 00
Limestone:				
Bedford	@ 1 00	95 @ 1 00	50 @	3 75 @
Joliet	@		35 @ 55	
Lemont	@		35 @ 60	
Serpentine	@		80 @ 90	75 @ 2

(*Continued on page* —)

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	New York.	Boston.	Chicago.	Philadelphia
Foundation:	*(Wholesale Prices.)*	*(Prices to Builders and Contractors.)*		
Dimension	@	5 00 ℔ ton	20 @ 28	30 @ 5 00
Block	@	4 60 ℔ perch	8 50 ℔ cord.	50 @ 6 00
Rubble	@	1 25 @ 1 50	8 50 @	
Bluestone: (℔ *sq. ft.*)				
Sidewalk	30 @ 5 00	40 @ 1 75	75 @ 1 00	70 @ 90
Planed	50 @ 6 00	75	50 @ 1 00	1 10 @ 1 25
Sandstone,				
Longmeadow		75 @ 85		
Kibbe		85 @ 95		
Brown (Connecticut)	1 00 @	1 25 @ 1 45	1 50 ℔ cub.ft.	1 35 @ 2 00
Amherst } Ohio	90 @ 95	90 @ 1 00	55 @ 65	
Berea } Ohio	75 @ 1 00	80 @ 90	45 @ 55	90 @ 1 10
Berlin } Ohio	75 @ 1 00	80 @ 90	55 @ 65	
Belleville	80 @ 1 25	1 25 @ 1 35	"	
New Brunswick and Nova Scotia	@ 1 00	75 @ 1 00	"	
Caen	@	@ 2 00	"	
Marble (℔ *cu. ft.*)				
Lee, Mass.	@	1 75 @ 2 50	*Not sold.*	2 00 @ 2 50
Rutland, white	@	@ 3 00	3 50 @ 6 00	2 25 @ 2 50
Sutherland Falls	1 25 @ 1 75	@ 2 00	3 50 @ 6 00	2 50 @ 4 00
Glens Falls, black	@	2 00 @ 3 00	*Not sold.*	4 00 @ 4 50
Italian, blue-veined	@	50 @ 60	@ 4 40	—@—
" Sienna	@	3 00 @ 3 50	*Not sold.*	3 25 @ 6 50
Tennessee, red	@	1 25 @ 2 50	@ 4 00	2 00 @ 3 00
" Knoxville	@	85 @ 90	@ 4 00	@ 1 50
Pennsylvania, blue	@		*Not sold.*	2 23 @ 2 50
Vermont, white	@	1 50 @ 2 00	3 50 @ 6 00	
Slate: Roofing (℔ *square*)	7 00 @ 8 00	4 50 @ 7 00	6 25 @ 8 10	6 25 @ 7 00
" green	@ 5 75	@ 5 75		@ 7 00
" " unfading	7 00 @ 8 50	5 50 @ 6 50	@ 8 60	@ 12 00
" purple	@ 15 00	13 00 @ 14 00	—@ 16 00	@ 4 00
" red	— @ —	Brownville, Me.	7 20 @ 7 60	@ 4 50
" black, Lehigh	— @ —	6 50 @ 9 00	7 30 @ 8 00	@ 15 00
" " Chapmans	5 50 @ 8 00	5 50 @ 8 00	6 00 @ 8 50	@ 3 85
" Unfading Black, Monson, Me.	@		*Not sold.*	
Tiles, Am. ℔ M.				
N. Peach Bottom, warranted unfading				
LUMBER.—℔ M.				
Boards: (*Ordinary dimensions.*)				
Pine, 1st quality, clear	65 00 @ 75 00	50 00 @ 60 00	44 00 @ 47 00	65 00 @ 75 00
" 2d quality	55 00 @ 60 00	42 00 @ 48 00	41 00 @ 44 00	55 00 @ 60 50
" 3d quality	18 00 @ 22 00	35 00 @ 40 00	37 00 @ 43 00	18 00 @ 22 00
Spruce	@ 25 00	11 00 @ 14 00	*Not sold.*	@ 22 50
Hemlock	ea. 17 @ 18	11 00 @ 12 50	@ 10 00	12 50 @ 15 00
Yellow pine	20 @ 40	30 00 @ 38 00	@ 28 00	17 00 @ 20 00
Cypress	@	32 00 @ 40 00	@	40 00 @ 55 00
Clapboards:				
Pine	@	33 00 @ 55 00	10 00 @ 21 50	—@—
Spruce	@	23 00 @ 35 00	*Not sold.*	—@—
Framing Timber:				
Pine			11 00 @ 16 00	25 00 @ 35 00
Spruce	13 50 @ 16 00	13 50 @ 15 00	*Not sold.*	18 50 @ 20 00
Hemlock	12 00 @ 15 00	@	10 50 @ 15 50	12 00 @ 13 00
Yellow pine	18 00 @ 25 00	23 00 @ 26 00		25 00 @ 30 00
Laths:				
Pine	@	2 25 @ 2 35	1 75 @	—@—
Spruce	2 20 @ 2 25	2 00 @ 2 25	*Not sold.*	2 35 @ 2 40
Shingles:				
Pine, shaved ℔ M	5 00 @ 6 00	@	*Not sold.*	
Pine, sawed "	4 00 @ 5 50	@ 4 50	2 25 @ 2 45	
Spruce, sawed "	1 50 @ 2 00	@ 1 50	*Not sold.*	
Redwood ℔ 125	1 40 @ 1 60	3 75 @ 4 50	5 50 @ 8 00	{30" $10 @ 28
Cedar, split ℔ M	@	@	*Not sold.*	{24" 8 @ 21
Cedar, sawed "	@	2 00 @ 4 00	2 00 @ 2 25	{20" 5 50 @ 14
Cypress. Split....7 x 24. "	18 00 @ 20 00	5 50 @ 6 00	4 00 @ 4 50	13 00 @ 20 00
Miscellaneous:				
Piles ℔ ft.	4½ @ 5½	Piles 6c. ℔ ft.	*Not sold.*	
Fence pickets, Spruce	8 00 @ 10 00	10 00 @ 18 00	Pine, 8 @ 21 00	12 00 @ 14 00
Cedar posts, 9 ft. (sq. posts.)	@	25 @ 35	9 00 @ 21 00	70 @ 1 25
Chestnut "	@	25 @ 35	*Not sold.*	28 @ 36
Finishing Woods: ℔ M. (*First Qual. Kiln-dried.*)				
Ash	@ 55 00	38 00 @ 48 00	35 00 @ 40 00	45 00 @ 50 00
Cherry	80 00 @ 120 00	60 00 @ 90 00	80 00 @ 100 00	65 00 @ 90 00
Chestnut	@ 55 00	38 00 @ 50 00	45 00 @ 50 00	60 00 @ 80 00
Butternut	40 00 @ 60 00	60 00 @ 70 00	50 00 @ 60 00	70 00 @ 85 00
Mahogany, Baywood [Mexican]	@ 180 00	150 00 @ 160 00	150 00 @ 180 00	120 00 @ 150
" St. Domingo	@ 350 00	120 00 @ 350 00	250 00 @ 300 00	
Maple	45 00 @ 50 00	45 00 @ 65 00	30 00 @ 35 00	30 00 @ 50 00
Oak, red	@ 70 00	@ 50 00	35 00 @ 40 00	35 00 @ 45 00
" white	@ 70 00	@ 55 00	35 00 @ 40 00	55 00 @ 65 00
" quartered	@ 90 00	65 00 @ 70 00	45 00 @ 50 00	70 00 @ 80 00
Sycamore quartered		50 00 @ 65 00	40 00 @ 50 00	70
Pine, clear	65 00 @ 70 00	50 00 @ 65 00	45 00 @ 50 00	65 00 @ 90 00
Redwood	60 00 @ 70 00	60 00 @ 70 00	56 00 @ 65 00	100 00 @
Rosewood ℔ lb	@ 6		@ 7	
Walnut, black	125 00 @ 150 00	85 00 @ 120 00	80 00 @ 100 00	160 00 @ 200 00
Whitewood	45 00 @ 50 00	38 00 @ 45 00	30 00 @ 35 00	20 00 @ 30 00
Yellow pine ℔ M	@ 45 00	40 00 @ 45 00	30 00 @ 35 00	30 00 @ 35 00
Gumwood, best red			30 00 @ 35 00	
PAINTS. (*In oil, ℔ lb.*)				
White lead, Am. (*in oil*)	6½ @ 6¾	@ 6½	@ 6¼	5 @ 6¼
" Zinc, "	5 @ 8¾	@ 8	7 @ 10	4 @ 6
Red lead, Am.,	6 @ 6¾	6 @ 6¾	@ 6¼	
" Venetian	6 @ 10¾	7 @ 12	1¾ @ 2¼	6 @ 8
" Vermilion	65 @ 70	55 @ 60 dry	55 @ 60	Am. 14 @ 22
Red Indian, Eng.	12 @ 20	12 @ 20	12 @ 20	12 @ 18
Yellow Ochre	6 @ 15	7 @ 12	3 @ 15	7 @ 9
" Chrome	12 @ 20	18 @ 25	15 @ 25	12 @ 25
Green (chrome)	8 @ 13	8 @ 20	10 @ 20	9 @ 15
Green, Paris,	25 @ 40	25 @ 40	18 @ 35	18 @ 22
Black, lamp,	15 @ 25	15 @ 25	8 @ 30	8 @ 12
Blue, ultramarine	12 @ 18	18 @ 30	12 @ 35	11 @ 35
Oil, linseed, (raw) (℔ gal.)	44 @ 46	47 @ 52	42 @ 43	52 @ 55
" " boiled (℔ gal.)	47 @ 49	50 @ 55	45 @ 46	57 @ 59
Turpentine (℔ gal.)	34½ @ 36	39 @ 46	36 @ 38	@ 45
Varnish, coach (℔ gal.)		1 50 @ 6 00	1 25 @ 2 00	1 75 @ 2 25
Shellac		2 50 @ 3 00	3 25 @ 4 00	1 10 @ 1 75
Putty	2 @ 3	2 @ 4	02 @ 03	2 @ 2½
Whiting (*dry*)	50 @ 65	1 @ 1½	1 @ 2	1 @ 1½
Paris white, (Eng.,) (*dry*)	2 @ 3	2 @ 3	2 @ 2½	1½ @ 1¾
Litharge, Am. (*dry*)	5½ @ 5¾	6½ @ 7	6½ @ 10	6½ @ 7¼
Sienna (burnt)	12 @ 17½	14 @ 20	4 @ 16	9 @ 14
Umber, "	11 @ 16½	14 @ 20	@ 10	9 @ 14

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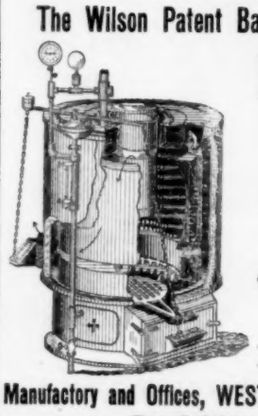

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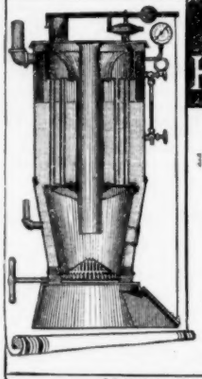

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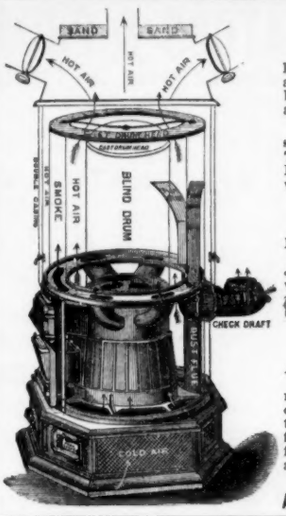

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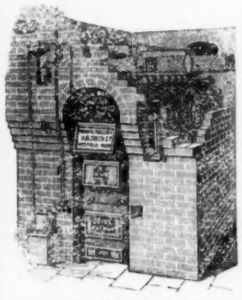

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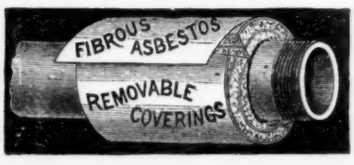

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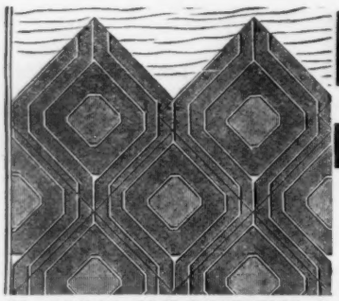

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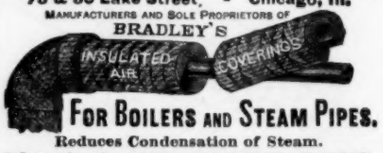

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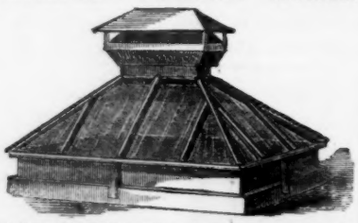

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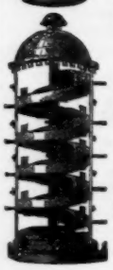

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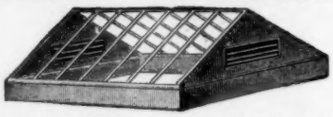

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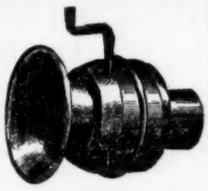

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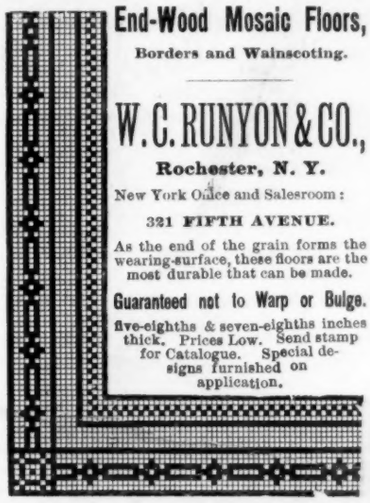

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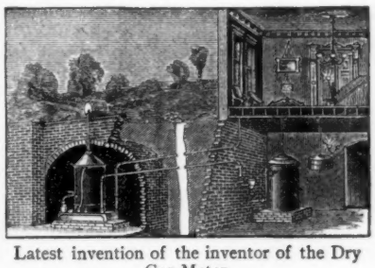

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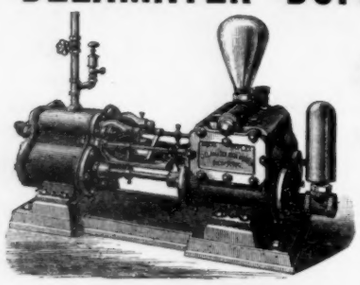

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THE Royal Institute of British Architects, the largest and most influential body in the profession, has now under consideration a change in its charter, by which it is to be made possible for members who cannot attend the meetings in London to vote on questions in which they may be interested "by means of voting papers transmissible by post." The Royal Institute has often been accused of excessive conservatism, but, although it moves slowly, it is certainly managed with great ability, and nearly every year brings with it some change in the by-laws, or some movement among the members, sanctioned and encouraged by the government of the Institute, which is destined to exert a great and lasting influence over the future of architects in all parts of the world. It is only about two years, for instance, since the rule requiring all candidates for admission as Associates of the Institute to pass an examination was, after many months of discussion, finally adopted, but the effect of the strict enforcement of the rule is, we think, already visible in a somewhat more considerate treatment of the profession by those outside of it, as shown in many instances, and still more in the calmer and more rational tone in which topics of professional importance are discussed in the technical journals. There is no surer sign of conscious weakness than intemperate language or action, and the disappearance from the English papers of those complaints and recriminations, particularly in regard to competitions, which were once so common, gives evidence of the improved standing of the profession in Great Britain, and the more secure prosperity of its members, which have resulted, partly from the elevation of the principal professional association to the rank of a learned body, requiring definite qualifications for admission; and partly from the movement of resistance to the abuses of public competition which was one of the first tasks to which the reinvigorated Institute put its new-found strength. The improvements in methods of management at present contemplated follow naturally from those already accomplished. The Institute now deals with matters of greater professional interest, and acts upon them with greater authority, than ever before, and the desire of the provincial members to be enabled to take part in the proceedings is, we venture to say, no stronger than the wish of their leaders to secure, in just this way, that widespread sympathy with their plans, and support of their policy, which will enable them to advance still more rapidly and certainly in the elevation of the profession for which they have already done so much.

THE *Builder* gives some interesting particulars of the life of the late Professor Donaldson, a man whose enthusiastic activity in his profession won for him well-deserved honors in nearly every part of Europe. His father, an architect, and district surveyor in London, was of rather distinguished descent, and seems to have been a clever and judicious man. He sent his son to one of the public schools, at St. Albans, where he remained until he was fourteen years old, and was then sent out to the Cape of Good Hope, to begin a mercantile life in the house of Mr. Robert Stuart, one of the principal merchants of South Africa. Soon after his arrival there, an expedition was fitted out to attack the French colony of Mauritius, and young Donaldson volunteered to accompany it. After effecting a landing, the expedition made ready for an assault upon the fort, and Donaldson, although hardly more than a child, was selected as one of the "forlorn hope" to make the first attack. Fortunately for the profession of architecture, the French, seeing the preparations, concluded not to wait for the assault, but made terms for surrendering, and Donaldson returned to the Cape unhurt. He had hoped to obtain a commission in the regiment in which he had volunteered, but his youth was probably against him, and he returned, disappointed, to England, where, at the age of sixteen, he began the study of architec with his father. He was encouraged, as all young architects should be, to practise himself in purely artistic work, and carried off in 1817 the silver medal of the Antique School at the Royal Academy, a signal honor for a student who expected to be neither a painter nor a sculptor. After this, as our readers know, he spent several years in travelling, sketching and writing, and, while in Rome, living with the French students at the Villa Medici, amused himself by designing a temple of Victory, which was shown to Canova, and won for its author an election to membership in the Academy of St. Luke, of which Canova was then President. His subsequent life was not extremely eventful, but his energetic character showed itself in nearly everything that he did, and his death at the age of ninety, although he had many years before given up active work, was felt as an irreparable loss to the profession.

IT would be hard to find anywhere a pleasanter little city than Havre, the principal port on the Norman coast of France, and it seems, from an account given in *La Nature*, that this pretty town is also fortunate in the possession of a public-spirited set of men, who have recently carried out with great success a plan for the amelioration of the dwellings of their poorer fellow-citizens. The Mayor of the city, M. Siegfried, with M. Mallet, the President of the Chamber of Commerce, and Dr. Gibert, who seem to have been most active in the matter, observing, as others have done, that the poorest people pay a higher rent for their tenements, in proportion to the accommodation which they get, than those of a more affluent class, inquired into the reasons for this apparent injustice, and learned, what any tenement-house agent might have told them, that, owing partly to the lack, among many of those who occupy the cheapest rooms, of any personal property which can be attached as security for the payment of the rent, and partly to the disproportionate cost of the legal proceedings necessary to get rid of a dilatory tenant, many losses occur in the management of this class of property which are avoided in the case of better rooms, rented to people who have something to lose, and would rather pay their rent honestly than have their goods seized by the sheriff; so that it is necessary to add to the normal rental of the smallest tenements a percentage large enough to make up for the inevitable losses by the small frauds of irresponsible persons.

WHERE is no legal maxim more frequently confirmed in the courts than the proposition that all the terrors of the law cannot make a man pay his debts if he has nothing to pay them with; and the good citizens of Havre, finding the inevitable corollary of this to be that if a man does not pay his debts himself, some one else, whether willingly or unwillingly, has to pay them for him, applied themselves to the preparation of a scheme by which the poorest tenant, not absolutely a pauper, should be encouraged to obtain, in as brief a time as possible, a small property, the possession of which would afford security for the payment of his debts, and would thus enable him to enjoy those reductions in rates of rent and household expenses that constitute one of the privileges of honesty and financial solvency. It is needless to say that their solution of the problem was essentially the same that has already been discovered in England and elsewhere, consisting in the sale of dwellings to poor tenants by instalments extending over a long series of years; but the details of the Havre scheme differ a little from the usual plan. The first step was to form an incorporated company, with a capital of forty thousand dollars,

to which the city added five thousand as a gift. A rule was adopted to the effect that four per cent interest on the investments of the company should be the maximum demanded or expected, and the directors proceeded to begin building operations on this basis. A quantity of land was procured, and divided into lots varying in area from one thousand to thirteen hundred square feet; and houses were built, each being about sixteen by twenty feet in plan, outside the walls, and two stories high. The entrance story was divided into two rooms, one fourteen and one-half feet by eleven feet, and the other seven feet by eight and one-half feet, the stairs and hallway occupying the remaining space. The second story was divided in the same way. A garden was left behind each house containing five or six hundred square feet of ground, and a yard in front of about half this size. This was not, it is true, a very extensive establishment, but it was large enough to shelter a good-sized family comfortably and decently, and to accommodate an immense amount of domestic virtue and happiness; and the whole affair, ready for occupancy, cost less than six hundred dollars, including the price of the land. The houses were built in pairs, for the sake of economy, and were rented for sixty dollars a year, with the agreement that the tenant who paid his rent regularly for fifteen years should become the absolute owner of his house. The rent was nominally divided into two portions, forty-two dollars being regarded as rent simply, and the remaining eighteen as a sinking-fund payment, and it was provided that in case any tenant should wish to give up his house, or should fail to pay his rent, the amount of his contributions to the sinking-fund should be returned to him, with interest at three per cent, after deducting the expenses incident to the change of tenants. In this way the company was sure of its money, since each tenant always had a sum on deposit sufficient to cover any loss likely to occur under good management, and it could afford to give its tenants the advantage of the lowest rates of interest. In case a tenant wished to anticipate his payments he was encouraged to do so by an allowance of five per cent interest on all sums paid before they were due. When matters of this kind are clearly explained to them, workingmen, even of the poorest class, are often as intelligent in trying to save a few cents of interest as any millionaire bank-president could be, and at Havre the amount of anticipated payments has been so great that although the company was only incorporated in 1871, fifty-six, out of one hundred and seventeen houses which it has built, have already become the property of their tenants, and about twenty more will very soon be finally transferred.

A NOVEL scheme is proposed in a supplementary sheet sent out with the last number of *Le Génie Civil*, for raising the money needed for the great Paris Exposition of 1889, without calling either upon the Government, the city of Paris, or the hotel proprietors and railway companies. This scheme, which is put forward by M. Berger, consists mainly of the issuing of invitations to all persons to become stockholders in the exhibition, and the division of the capital necessary, which is calculated at ten million dollars, into ten million shares, of the value of one dollar each. Payment for the shares might be made either at once, or by five annual instalments, of twenty cents each; and the possession of a certificate of stock would entitle the holder to a discount of ten cents from the price of admission whenever he went to the exhibition, as well as to such discount from the regular rates of fare as the railway companies would probably find it for their advantage to allow to stockholders at a distance; and at the end of the exhibition the whole amount received from entrance fees and other sources would be divided by lot, in prizes of varying amount, among the stockholders. Although the number of subscribers necessary, according to this plan, would be equal to one-fourth of the population of France, M. Berger believes that the money could be raised. The large manufacturers, merchants and other persons, who have usually been called upon to make large subscriptions to the guarantee fund for such occasions, would, he thinks, be much more disposed to subscribe at once for five hundred or a thousand shares, at a dollar each, which they could please their workmen by distributing among them, than to send their certified checks for five or six thousand dollars to the treasurer of the guarantee fund, to lie idle in his custody for two or three years, losing interest, even if the fund should not, after all, be called upon; while the finances of the Exhibition would gain, not only by the direct contribution of a sum quite as large, probably, as the same subscriber would in any case be held to pay under his guarantee, but by the distribution of so many certificates among persons who would not otherwise have been interested in the affair. As M. Berger remarks, it is well known that people who have complimentary tickets to the theatre given them often spend more than the cost of an ordinary ticket to avail themselves of their privilege; and he thinks that the ten million stockholders will make exertions to get to the Exhibition, and enjoy the benefit of their discounts, which they would not have thought of under ordinary circumstances. It is proposed further, as an offset to the enormous number of free admissions which are necessarily granted to exhibitors and their agents or salesmen, that all exhibitors shall be required to subscribe to the capital, to the amount of one share for themselves, and for each of their representatives and agents in the Exhibition. As the possession of stock, although it offers them no privileges in regard to admission which they would not enjoy under the ordinary management, carries with it the right to participate in the final distribution of profits, few exhibitors would object to subscribing the small sums required, and the gain to the resources of the enterprise would be very important. The final lottery for the benefit of the shareholders is, as M. Berger says, the most objectionable part of the plan, but he considers that a fair equivalent is, without it, given to those who buy shares, so that the worst element of gambling is removed; and as it is necessary, not only to secure money enough beforehand to pay the cost of the Exhibition, but to return the profits to those who have furnished the capital, it is, he thinks, most judicious to choose a mode of doing so which will attract some persons who would be too selfish to contribute otherwise, while those who are satisfied with what they have already received for their subscription, can, if a prize should fall to them, use it for some benevolent purpose.

THE number of professional associations is increasing so rapidly in this country, that there must be among our readers a considerable number of society officials and committeemen who will be glad of such suggestions for conducting general reunions as can be obtained from descriptions of those held in other places. The last one of which we have received the programme is that of the Swiss Society of Engineers and Architects, which holds its annual meeting this year, by invitation of the local association, at Lausanne, on the border of the Lake of Geneva. Lausanne, it will remembered, was the favorite resort of Viollet-le-Duc, who spent his summers there for many years, and offers many attractions in the way of modern as well as ancient architecture, most of which seem to have been considered in the programme of the meeting. The first event on the list is the assembling of the delegates at the Hôtel de Ville, at four o'clock in the afternoon of Thursday, September 10. Here tickets are distributed for the fêtes of the succeeding days, and the delegates then disperse to their rooms and their dinner, to meet again at seven o'clock at a reception in the club-house of the Beau-Séjour. The next morning, at eight o'clock, a business meeting is held at the Casino Theatre near the Club-house, and papers are read and discussed; and at half past twelve lunch is served in the theatre. The afternoon is devoted to drives about the city, with visits to the Cathedral, hospitals, schools, railroad stations and so on; and at eight in evening is an out-door concert and reception. The next morning, at a quarter past eight, a steamboat leaves the port, a mile and a half from the town, for Evian, on the other side of the lake, where an interesting mountain railway is inspected, and the company then proceeds to the upper end of the lake, where a curious pneumatic railroad has just been built, and the boat reaches home at last, after touching at various interesting points on the way, at half-past seven in the evening. Half an hour later comes the dinner which closes the festivities of the meeting, and at midnight a special train is ready to take passengers to Berne, the central point of the Swiss railway system, from which all parts of the country are soon reached.

WE hope to find during the coming week that the draft which we made on the profession, when we suggested designs for Memorials to General Grant should be sent to us, has been honored in the spirit in which it was made; and we trust that the general result will be as satisfactory as the the designs already received leads us to believe it will be.

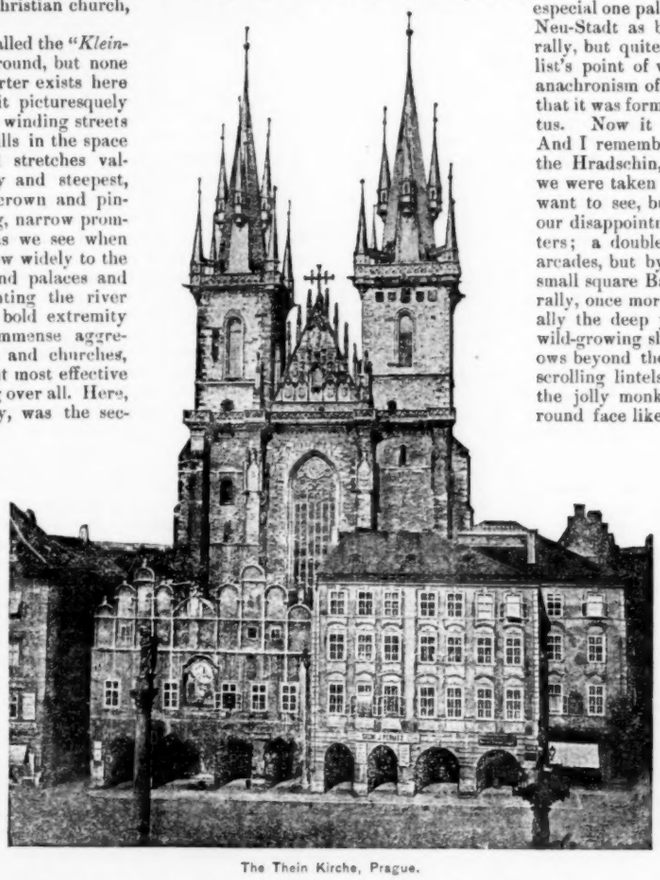
PRAGUE. — I.

Powder Tower, Prague.

ALEXANDER HUMBOLDT, first and greatest of "globe-trotters," is often quoted as having called Prague the most beautiful inland city he had ever seen. If the quotation is not authentic it is certainly *ben trovato*. Without rivalling Humboldt, I have seen many cities in many lands, yet but very few — whether inland or sea-girt—which are worthy even to be compared with Prague for beauty. Its charm is half natural, half architectural; and the two factors harmonize and enhance one another so admirably that it seems as though Nature had worked with a prophetic eye upon the artist, and the artist always with a grateful care for her.

The city lies on both sides of the Moldau — a wide and vigorous stream dotted with wooded islets — where it makes a right-angled turn, and flows east for awhile after having flowed due north. On the right bank, in the elbow of the stream, and set about with an amphitheatre of hills, lie the Alt-Stadt and the Neu-Stadt, once separate quarters divided by a wall, but now blending together and appearing of quite equal antiquity. At the extremity of the Neu-Stadt — that is, at the up-stream extremity of the town — rises the hill called Wyscherad, where the first founders of the town established themselves at least as early as the ninth century. Here in 874 was built Prague's first Christian church, the second in all Bohemia.

The left bank of the river called the "*Klein-Seite*" offers but little level ground, but none the less a wide-spreading quarter exists here as well, and all the more is it picturesquely delightful. A mass of narrow winding streets and irregular open squares fills in the space between the steep hills, and stretches valiantly up the most northerly and steepest, the Hradschin, which is the crown and pinnacle of Prague. It is a long, narrow promonotory rather than a hill, as we see when we reach the top and find how widely to the westward stretch its streets and palaces and gardens; but the sides fronting the river are very abrupt, and on the bold extremity stands the royal *burg;* an immense aggregate of fortifications, palaces and churches, with the broken, unfinished but most effective mass of the cathedral towering over all. Here, at the down-stream extremity, was the second settlement made in Prague, the city, as we might guess, having crept downwards to the low grounds from beneath the protecting shelter of its two early castles. There are many magnificent points of outlook in Prague, but the finest of all is from the Hradschin. Immediately beneath our feet the steep hill-side is dotted with palaces and covered with gardens. The middle distance far below is a long reach of the most diverse and effectively grouped towers, and spires, and domes and turrets, with the river curling through them, spanned by its many bridges. And the background everywhere on both sides of the stream is formed by forest-covered heights of the most enchanting outlines. As far as the eye can reach up-stream the city extends, the Wyscherad hill being barely visible in the distance. And as far as it can reach in the opposite direction is a beautiful rolling country sprinkled with spires and villages. It is more than a beautiful view; it is a vast and magnificent panorama, as varied as it is harmonious. To see it in winter would still be a privilege; but in winter one would not really see *Prague;* for I say, Nature's handiwork is at least as important a factor in her peculiar charm as is the handiwork of man.



The Thein Kirche, Prague.

As for this last, it is very interesting in many individual monuments, but still more interesting considered as a whole; looked at simply as an ever-changing picture where the elements of many ages mingle together in a curiously felicitous manner. There is no architectural lion of the first class to be noted, but all the specimens in the brilliant show do but roar the more effectively in consequence. No one thing kills another, and no one period seems so especially characteristic, that we are inclined to depreciate others in its favor.

The greater part of the many Romanesque buildings which once existed have naturally disappeared, but some small and simple yet interesting monuments remain. There is a great deal of Gothic of many kinds and periods and qualities; there is at least one early Renaissance structure, which for purity and true Italianism of accent has few rivals north of the Alps; and there is later Renaissance in abundance, and Baroque without end. Often the Baroque work is very good of its kind, and even when it is not so good it does not distress us as it does in most other places. For the truth is that Prague does not put us in a very serious architectural mood. It is so supremely entertaining that we are content simply to be entertained; do not ask to be instructed or inspired. We are perpetually delighted, but we do not so much admire upon our conscience as cast critical responsibility to the wind and light-mindedly applaud. If for a moment we are touched to greater seriousness, at the turning of the first street-corner we relapse into our careless optical pleasure-seeking. Picturesqueness is the order of the day, motley is the only wear in the Bohemian capital. If an object is picturesque; brings an unexpected or a "telling" note into the harmonious medley, we forget to ask for more. And the mass of Baroque which mingles with more thoroughly respectable factors in the brilliant pageant, plays its role to the entire satisfaction of our superficial mood. All of which is to say that not the architect so much as the painter — and the water-color painter at that—finds his ideal in Prague. Such an one might work there for months—nay, years—without exhausting its fascinations, to which the colored plaster of the last two centuries certainly contributes in a noteworthy way. I remember in especial one pale green Rococo building in the Neu-Stadt as being weak enough architecturally, but quite enchanting from an aquarellist's point of view. (With the usual naïve anachronism of the popular mouth one is told that it was formerly the abode of Doctor Faustus. Now it is a deaf-and-dumb asylum). And I remember also, up on the hills behind the Hradschin, the Strahow Convent where we were taken to see many things we did not want to see, but where we were repaid for our disappointment by a glimpse of the cloisters; a double quadrangle enclosed not by arcades, but by low solid walls pierced with small square Baroque openings. Architecturally, once more, it was naught; but pictorially the deep yellow of its stucco, and the wild-growing shrubbery, and the strong shadows beyond the openings; yes, and even the scrolling lintels and jambs themselves — and the jolly monk in the foreground with his round face like the sun on the dial-plate of a colonial clock — pictorially, I say, it was worthy of some "Spanish-Roman" painter's art.

One can only see Prague by spending all one's money on cab-drivers. For the points of view which must be taken to appreciate the vast panorama in its entirety, and also the chief objects of interest, are widely scattered; and the distances are enormous to say nothing of their being chiefly up-and-down hill. But, one of the many proofs that in going from Saxony into Bohemia one goes from the north to the south, the drivers are of the race of Jehu, and the local entertainment gains an added touch of exhilaration for which one gladly pays.

The historic interest of Prague is as great, and also as varied and as picturesque, as its architectural interest. It is a serious story enough if understandingly pondered. But to the average ignorance of the casual tourist it does not seem serious so much as brilliant, and again, entertaining in quality. It is very dim and misty in its earlier portions; and the barbaric Bohemian names which mark the chronicle sound as fantastic and unreal as the nomenclature of some remote mythology. Even when we get down to firmer foundations, and think of the great religious wars which here had their centre for hundreds of years, even then, I fear, our knowledge is likely to be but superficial. Who Ziska was and Huss and Jerome of Prague and Wallenstein we know, and what were Protestants and Catholics. But this is by no means enough of a clue to make plain the mazy tales of local leaders and of endless warring sects and quarreling congregations and brotherhoods (ironic term) which form the staple of Prague's wild record. But at the moment one hardly

regrets his ignorance; the whole thing seems like a legend invented for pure picturesqueness, and gains in "tone" what it lacks in definiteness of contour. One does not care to pry into details each of which has its bloody and revolting, if often, too, its heroic side; or to be asked to pronounce in retrospect between parties each and all of which upon nearer acquaintance seem ferocious and detestable. At home in one's prosaic study, I should say, is the place to bend one's mind upon the history of the Reformation with its Hussite preface, and its ultra-Catholic sequel. Then one will surely rejoice to have Prague's picture in the background of one's memory. But on the spot — well, he must be a serious-minded man indeed who during a brief stay can find time to do aught else than use his eyes for their sensuous delighting. I will but add that the merest smattering of local history (which will include, of course, the familiar tale of the great Frederic and his terrible bombardment), causes us to wonder, not that desecration and destruction, fire and sword and iconoclastic rage, should have left their myriad traces, but that one stone of mediæval Prague should to-day remain upon another. And, too, when we remember that Prague was the earliest stronghold of Protestantism in Germany, was the great centre of would-be reform a century before Luther's birth and carried on the struggle with unrivalled energy for a century beyond his death; and when we then note that its modern character is so pronouncedly Catholic as to seem quite exotic north of the Alps, we learn that the blood of the martyrs is not always, locally speaking, the seed of the church. At the battle of the White Mountain in 1621 Wallenstein so wiped out the valiant Protestantism of Bohemia that there are to-day but three thousand Protestants among the two hundred and fifty thousand residents of Prague. Looking back from an impartially architectural standpoint, however, one cannot persuade one's self to sympathize very strongly with the reformers. For they were even more destructive to art in fact than they were to Romish doctrines in intent; and the worst of their ravages were wrought when, the common enemy having been banished for a season, they found leisure to war among themselves.

Our inn (called by the mediæval-sounding name of the "Blue Star," but hopelessly modern in all besides), looked out directly on the "Powder Tower." Built in the middle of the fifteenth century, it is now the only relic of the former Alt-Stadt wall. When I saw it first, some years ago, it was but a relic of itself, as our illustration shows; but it was more attractive in that condition than to-day, when it has just been "restored" into a very different shape as well as surface. All the sculptures of the fronts have been renewed — it is but fair to say with scrupulous care for every tiniest item of ancient handiwork; but these items were so few that the general effect is very spick-and-span, and while the decorative detail is fairly well done, the figure sculpture is quite down to the restorer's average. But one might possibly forgive this if the little inappropriate but quaint and undisturbing eighteenth-century cap of red tiles had not been replaced by a heavy panelled balustrade, and an immensely tall slated roof of the saddle-back pattern. A roof of similar kind may have crowned the tower in its original estate, but doubtless it was not of similar outlines and proportions.

Passing under the tower a narrow street leads us ere long to the *Grosser Ring* or market-place of the Alt-Stadt. One side is shared between a Baroque palace and the Gothic Thein (or Teyn) Kirche which rises to an immense apparent height over the low arcaded houses which conceal its base. Opposite the church on a corner stands the Rath-Haus, which is now chiefly pseudo-Gothic of about forty years' antiquity, but which still retains the body of its ancient tower, with a curious sixteenth-century clock of dramatic performance; a very late and fantastic Gothic doorway with a couple of neighboring windows; and an exquisite polygonal oriel with a lofty tapering roof. This oriel dates from the middle of the fourteenth century, and has special interest apart from its matchless grace and lightness of design, for it was and still is—or rather, now is again—not a mere window but the apse of a small chapel in the second story of the building. Of the interior of the old Rath-Haus little survives save this chapel and a great council-chamber, I believe the latter is very well preserved, with a great deal of carved and painted panelling and a fine wooden ceiling, the great beams of which are curiously supported to the eye by gilded chains; but the sight of it was the sacrifice I made to the goddess of lost opportunities. (One never leaves any place, I find, without making some such sacrifice and usually at the prompting of the same silent priest — forgetfulness).

With the Rath-Haus and the *Grosser Ring* we are in the very heart of Prague as the great religious struggles knew it. To name but a couple of characteristic items: below the oriel-apse was built out the scaffold where a batch of noble rebels were beheaded by order of Ferdinand II in 1621; and in the market-place fell the heads of those officers whom Wallenstein branded as cowards after the battle of Lützen in 1633.

Continuing our stroll we pass under the walls of a great aggregate of late Renaissance, of Baroque and Barocicised buildings known as the *Clementinum*, once a very famous and still a less famous Jesuit seminary. Then we come to the open *Platz* which forms the vestibule, so to say, of the chief and oldest bridge. This is named the Carls-Brücke after its creator Charles the Fourth, who in the fourteenth century founded the famous University of Prague, and bestirred himself in a mighty manner for the profit and adornment of the town. As he is the great local lay saint we cannot but wish that a fine station near the bridge was occupied by a better statue in his honor than the one set up a few years ago by the Dresden sculptor, Hänel. (I may say in parenthesis that the modern statues of Prague are rather worse, while decidedly more ambitious than those in most other trans-Rhenish towns. I have rarely seen the equal, for instance, of the Radetszy Monument with its enormous bronze figure of the great marshal posturing on top of something, which, we are told, is a shield and which is upheld, as we also know from hearsay only, by eight soldiers who posture on the ground).

The Alt-Stadt end of the bridge is defended by a huge tower, similar in design to the "Powder Tower," but earlier in date. At the farther, *Klein-Seite* end is another of analogous design, and a second which is still earlier, is smaller, and unlike its fellows has not yet been "restored." But it would have been a very vandal of a restorer who could much have injured the general effect of these great portals with the beautiful wide sweep of the long bridge between. The finishing touch of picturesqueness was given by the art of the last century in the shape of the colossal statues of saints which range themselves on either balustrade; a most vivacious, entertaining and decorative, if sculpturally reprehensible Rococo company. Yet even sculpturally they do not seem so reprehensible after all when compared with the one or two moderns who intrude among them. They are at least alive and full of character in their affectation and exaggeration, alive and most amusing; while the moderns are dead in their dull decency; depressing and doleful beyond the power of words.

Alt-Stadt End of Bridge, Prague.

On the bridge we may pause if we will — and of course we will if we have any soul for local color—to note the slab which marks the spot whence the great saint of Bohemia, St. John Nepomuc, was cast into the river in 1383 because he refused to tell the Emperor Wenzel all the Empress's private secrets as revealed in the confessional. His body floated in the Moldau for many days with five bright stars hovering above it, and he is now pictured and carven, stars and all, in every corner of the town. In one place above the bridge-balustrade he is carven in stone while the stars stand out about him in the guise of five great red gas-lamps; a bit of color which we may call widely modern rather than narrowly local. We are better pleased with a neighboring crucifix of enormous size that was paid for by fines exacted from Jews who had reviled the cross. It convinces us that the ancient Prague-ites had a feeling for the morally as well as for the materially picturesque.

We can note such details as these, however, only after we have sated our eyes with the superb view the bridge affords. The river whirls under the wide well-planted arches amid its green islands and at the feet of quaint time-worn houses. Both its banks, with the great bridge-towers as foreground features, offer a marvellous medley of conspicuous forms, the green copper domes of sundry Baroque churches giving the strongest note of color. And on the *Klein-Seite* bank which we are approaching rise in the near background the lofty Lorenz-Berg clothed to its top with forest, and the still loftier Hradschin clothed with man's handiwork, and surmounted by its fourteenth-century cathedral. So huge does the bulk of this appear, that we hardly realize at first what a fragment it is — merely a great choir with a polygonal end, a great square tower (capped with an odd Rococo finish of several diminishing stages), and a bit of transept end between, with its naked window arch showing like a bridge against the sky; but it is superb as a fragment, and the grouping changes into new effectiveness with every step we take. We cannot but regret that the body of the church is now being built and that, therefore, Prague's cathedral will ere long lose its individuality, and be but one among others. It seems almost too much to hope that it will not lose all its beauty too, that the general effect of the Hradschin will not suffer with it, and with this the general effect of Prague's matchless panorama.

M. G. van Rensselaer.

A Powerful Pulley. — A pulley thirty-four feet in diameter and weighing eighty-three tons has just been made in England. It has grooves for thirty-two ropes, which, together, will transmit 1280-horse-power, and the rim will have a velocity of more than a mile in a minute. — *Philadelphia Press.*

CLOCKS IN RELATION TO ARCHITECTURE.[1]

ALTHOUGH turret-clocks cannot be said to belong to architecture, yet their association therewith is so intimate, that some jottings on the subject from a practical standpoint may not be out of place in a journal devoted to architectural interests.

No tower, whether of church, town-hall, or other public building, can be considered complete without a suitable clock, for passers-by almost instinctively look up to see the time, and are naturally disappointed if there is no clock to show it. Indeed, the *raison d'être* of a church tower is to contain the bells, and the clock follows as a matter of course.

This primary purpose of the existence of a tower we find in many modern buildings entirely ignored; no provision, or at best a most inadequate one, being made for a clock of due proportions, suited to the size and importance of the structure.

Take a few instances at random. The important parish church of Kensington has, indeed, a clock, but it is invisible, and time is given by sound only, the architect having allotted no space for dials. In a busy thoroughfare like this, a clock with face and hands would be of the greatest public convenience, especially as it is by one of the first makers, an exact time-keeper, and cost £1,000. The better half of the usefulness of the clock lies barren and idle, and its value is to a large extent sacrificed.

At St. John's, Hammersmith, there has recently been erected a new tower of fair proportions, and a bell-chamber and an opening for a clock are provided, but the circular space is far too small. The elevation being sixty feet the minimum size of dial should be six feet in diameter. The space actually allotted does not exceed three feet, which will make the clock out of proportion with the building, and too small to be of much service.

Lower down on the same road, the conspicuous church on Turnham Green presents the ludicrous spectacle of a dial stuck half-way down, and in front of an unglazed window-space at the base of the spire,—as if to form a sort of shutter,—the bell-chamber being below, the cart before the horse. In this case, the architect had never contemplated the necessity for a clock, and the present awkward, ineffective arrangement—the dials being far too small for their elevation,—is evidently a make-shift and an afterthought.

Wren's treatment of church towers was very different to that adopted in the cases quoted, for we find that in his plans adequate provision is made for the clock which is *part of the design*, blending with it, and forming with the building one harmonious whole. Surely it does not require the genius of Wren to do this in modern structures. Examples may be seen in St. Paul's Cathedral (south-west tower), Bow Church, Cheapside (two dials nine feet in diameter, at an elevation of seventy feet, one of the most effective clocks in London); St. Bride's, Fleet Street; and many others.

In these cases the clock and bell-chamber, so far from detracting from the symmetry of the architecture—an excuse sometimes made when the former have been neglected or forgotten,—rather improve it, as will be evident on the most cursory inspection of the churches last mentioned.

Turret-clocks, like other things, have not escaped the influence of the modern spirit, which demands a perfection hitherto unexpected. Formerly allowance was made for the difficult conditions under which the clock worked. The disturbance of the hands by wind or snow,[2] the exposure of the movement (popularly known as "the works") to damp, dust, and grit, the effect of the weather on the oil and the metals, the action on the pendulum of extremes of temperature, and other adverse influences were taken into consideration, and the clock was excused if its time-keeping were irregular, as was generally the case. The variation of a few minutes was, from the absence of true time in the neighborhood, perhaps, never detected, or else condoned as the best to be expected, and of no practical consequence, as the mistake would be rectified at the next periodical winding. Indeed, allusion is made by old writers to the custom of allowing a quarter of an hour for the "difference of clocks."

There is no doubt that railways and the electric telegraph have indirectly done much to raise the standard of time-keeping; for the service of trains is regulated by Greenwich time, received daily by telegraph at the terminus, and thence transmitted to the various stations.

Exact time being now required, turret-clocks as the public standards are expected, no matter how exposed their situation or how large their dials, to keep an accurate rate, and not vary as many seconds per week as their predecessors varied minutes. This necessary condition ought to be stipulated for in all orders for new clocks, and makers of repute are prepared to comply with such a requirement.

Turret-clocks are not simply house-clocks on an enlarged scale, differing from them merely in size and weight, but the extra strength of the mechanism involves greater weight of material and increased weight implies increase of friction. It is of the first necessity to provide ample space for the fall of the weights and the swing of the pendulum, in order to make the clock thoroughly efficient and a good time-keeper.

The movement which has to be placed at some distance from the dials must be more powerful than one in close proximity, and forethought on the part of the architect will save expense both in the original cost of the clock and its subsequent repair. Unless sufficient space be provided, it is, indeed, impossible to have a first-class clock that will give satisfaction to its owners and be a credit to its makers.

The popular idea is that a clock is too complicated a piece of mechanism to be understood by any but those engaged in its manufacture, whereas, in reality, its design is extremely simple, consisting of four wheels and three pinions, *i.e.*, very small wheels the teeth of which are called "leaves."

A "silent" turret-clock, of the most simple construction, has the following train of wheels: —

MAIN WHEEL,	CENTRE WHEEL,	THIRD WHEEL,	ESCAPE WHEEL,
turns once in 4 hours, and has teeth	turns once an hour, carries the minute hand, and has teeth	turns once in 7½ minutes, and has teeth	which drives the pendulum, turns once a minute, and has teeth
80	64	60	30
gears into	gears into	gears into	
Pinion of 20 leaves.	Pinion of 8 leaves.	Pinion of 8 leaves.	

The action will be readily understood from the diagram of the "train of wheels" given above.

Each wheel, excepting the main-wheel, has a pinion (small wheel) on its arbor or axle. To the main wheel is attached a drum, which carries a weight to supply the motive power. The pendulum, we will suppose, oscillates once a second, it will, therefore, take a double oscillation for each tooth to pass the pallet, consequently the escape-wheel, with thirty teeth, will revolve once a minute.

There is no arbitrary rule for the numbers for the teeth, which can be varied so long as the due proportions are retained. As the escape-wheel turns sixty times to one turn of the centre wheel, the method for determining the numbers will be as follows: —Multiply the teeth of the intervening wheels (viz., the centre and third) and divide the product by that of the leaves of the pinions similarly multiplied, and the result, if the train is true, must always be sixty. This we shall find to be the case in the present instance: —

$$\frac{\text{Centre Wheel } 64 \times \text{Third Wheel } 60}{\text{Third Wheel Pinion } 8 \times \text{Escape Wheel Pinion } 8} = 3{,}840 \text{ divided by } 64 = 60.$$

In like manner, the rate of motion of the arbor or axle which carries the minute-hand has to be reduced for the hour-hand, which is set on a pipe through which the centre arbor passes. This is done by two pinions and two wheels, the pinions in this case driving the wheels, and not *vice versâ* as in the movement. The leaves of the pinions when multiplied must be one-twelfth of the product of the teeth of the wheels, because the minute-hand turns twelve times to one turn of the hour-hand.

The best clocks are usually made with wheels of gun-metal or hardened brass, the teeth being divided, cut, and polished by steam machinery, and finished without the aid of the file, emery-paper, or other polishing materials, so that the most minute difference is prevented and accuracy insured to the one-thousandth part of an inch. The pinions should be of hardened steel, cut from the solid, and made in the same manner as the wheels.

In cheap clocks constructed chiefly for public companies who give their contracts to the lowest tender irrespective of quality, iron is frequently used instead of steel, both for the pinions and arbors (axles), and cast-iron takes the place of gun-metal or brass in the wheels and bushes. These clocks are generally the production of firms who combine engineering with clock-making, and are naturally anxious to make one plant serve two purposes, notwitstanding the dissimilarity of the two pieces of mechanism under manufacture.

The result is that clocks thus made are faulty time-keepers, and that, owing to friction, rust, and brittleness — for iron wheels, however well made, are very liable to chip or break, or to oxidize and decay, —such clocks have, in a comparatively short space of time, become worn out and useless.

This opinion as to the unsuitability of cast-iron has been, I am aware, controverted, although no amount of argument can alter the facts, which are as stated.

It has, however, been said that "as soon as you cut off the friction of the train from affecting the escapement, it is obvious that cast-iron

[1] Reprinted from the *Builder*.

[2] This is not a fanciful supposition. The snowstorm which occurred early on Sunday morning, March 22, of the present year, stopped the great clock at Westminster and more than half the public clocks in London, the accumulation of snow on the hands overpowering the clock. Even in cases where the clock was not stopped, the hands would be retarded in their progress and thereby cause a loss of time.

wheels are just as good as brass or gun-metal." But it is not so. You never can prevent the friction of the train from affecting the escapement,—*i.e*, that part of the clock which regulates the discharge of the power imparted by the main-wheel. The celebrated Ferdinand Berthoud has proved in the case of watches, that "no escapement can have any influence over the main-spring, and consequently that it cannot correct the inequalities of the motive power from being transmitted to the balance, whose velocity is retarded or accelerated in conformity with the irregularities of the main-spring." And the same is true as regards clocks, any variation in the uniformity of the motion of the train communicates itself to the escapement and thence to the pendulum.

Moreover, the action of the escapement is to regulate the time, and not to correct defects in the mechanism, and to require from the former results it was not designed to give, can only end in disappointment.

A further argument is that cast-iron wheels, with smaller teeth than any used in turret-clocks, are successfully employed in spinning-machinery; but it is evident that the cases are altogether different, for the motive power in the latter instance is steam, the great force of which will drive the machinery even when the wheels are somewhat defective; besides, the evenness of the rate of motion is unimportant, provided the machine does the work assigned to it.

But in clock-work, none of these conditions obtain; the motive power, derived from the descent of a weight, is, compared with steam, very weak and consequently altogether inadequate to resist the inertia of defective wheels, whilst an even rate of motion is of the highest importance, and its absence would render the whole machine useles.

The most experienced person will see that wheels cut from the solid metal, hard and close in texture as gun-metal or brass, must be more efficient and reliable than cast-iron, the roughness and other defects of which are well known.

So far from brass corroding, as is sometimes asserted, in town atmospheres, old clocks may be seen with brass wheels that have been in action for more than 100 years and are still perfectly sound and good.

It must be borne in mind that the efficiency of a clock depends no less upon the materials and workmanship than upon the plan of construction; for if the metals used are liable to wear away by friction or corrode by damp, the most perfect design in theory will fail in practice.

The same is true as regards workmanship; unless the various parts are made with the greatest accuracy, all roughness removed from the edges of the teeth, and the surface of the acting parts made smooth and clean, friction is inevitable, and the clock soon cuts itself to pieces.

Too much care, therefore, cannot be given to details of manufacture, as an apparently slight defect in execution will be sufficient to spoil the uniformity of the rate of time, and thus detract from the efficiency and value of the clock.

The introduction of steam machinery has added to the accuracy of clock-work, and at the same time considerably diminished its cost. A turret-clock can now be produced for the sum of £150, which will excel in superior construction and accurate time-keeping one that a half a century ago would have cost £800, and the practical result is seen in the largely-increased number of public timepieces.

As the purchaser of a clock is not usually in a position to judge of its merits, he must rely upon the reputation of the maker, who, if he is an actual *bonâ fide* manufacturer (their number is very limited), and not a mere clock-seller, will be able to refer to public clocks erected by him in different parts of the country, so that independent inquiry can be made as to the efficiency of his instruments.

The winding of the clock seems a simple affair, and yet special precautions have to be taken not to derange the working of the machine.

If the drum which carries the weight were part and parcel of the great wheel, the winding would reverse the action, put back the hands, and utterly disorder the instrument. To prevent this, the drum has a ratchet or saw-toothed edge, into which fits a stop falling from the inner edge of the great wheel, and kept in its place by a spring: so that, turning in one direction the drum will drive the wheel; turning in the other it is free, the stop slipping over the teeth in a somewhat similar manner as the pawl in a windlass or capstan. By this means the revolution of the great wheel during winding is left undisturbed.

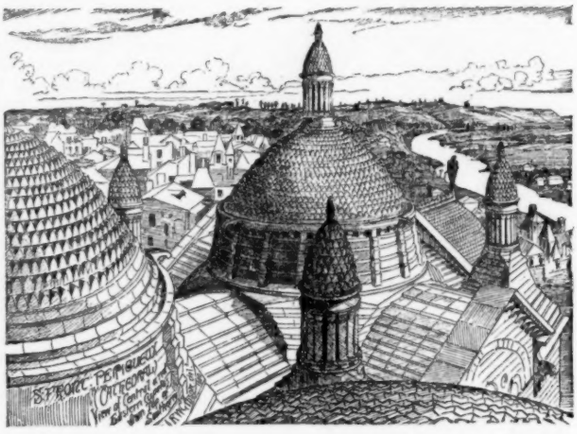
A second point to provide for is the *continuation* of the motion. As the act of winding takes the motive power off the great wheel, it is obvious the clock would stop, and the action of the pallets (for the swing of the pendulum would go on for some time after the stoppage of the train) upon the finely-cut teeth of the motionless escape wheel, would probably injure them,—unless some means were found to continue the action until the motive power is restored. This substitute, technically known as the "maintaining power," is of the greatest importance in large clocks, the winding of which takes some minutes.

The mechanism employed by the best makers is of a simple character, yet thoroughly effective and reliable. Its action is as follows:—To gain access to the winding square on which the key fits, the attendant must first raise a lever, one end of which being wedge shaped, gears, on being thus raised, into the teeth of the great wheel, and the other, being sufficiently weighted, supplies the motion. The winding completed, the lever gradually drops, with the revolution of the wheel, into its old position.

THE ILLUSTRATIONS.

[*Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.*]

PERIGUEUX CATHEDRAL, FRANCE.



THE Cathedral of St. Front at Periguex is one of the most curious in Western Europe, not only on account of its architectural merit but because of its, strange dissimilarity with the styles of architecture native to the locality. Fergusson mentions this ("*History of Architecture*" Book II, Chapter II) but does not give a very lucid explanation of it, although the ethnological phase of architectural history is prominently treated in this work. James F. Hunnewell ("*Historical Monuments of France*") explains how the edifice was made a reproduction, as far as their means allowed, of Venetian San Marco by a Venetian colony of merchants who commenced it in A. D. 984. This is possible, as St. Mark's was commenced 977 and finished structurally 1071, but not probable. The leading archæologists agree that the beginning of the eleventh century is the date of St. Front and that the earlier work (which may well date from 984) is an ante-church at the west end of the present one and comparatively small. Be this as it may, Perigueux Cathedral is a structure in the Byzantine style of the East rather than the Romanesque of Western Europe.

It is in ground plan a Greek cross covered by five domes (see plan) supported however upon pointed arches. The main piers are very severe and massive. They were originally too weak and were strengthened by outer casings of stone which exaggerate the ponderousness of effect. The whole of the edifice has been restored, almost reconstructed so thorough has been the work, and much has been done apparently without sufficient data or proper regard for it, for certain features have an air decidedly modern French. But in the main the restoration is gratifying, and it is certified in many places by fragments of the ancient work itself, left in place to attest the correct re-production of the design. Of course the interior is very bare and cold. It is a style which requires lavish adornment in paint and gold and mosaics to reach its greatest force.

Externally the Oriental character of the building is very marked. The domes are surmounted by cupolas upon closely-set shafts, and similar cupolas stand upon the intersection of the great arches. The view of the central and eastern domes, taken from the top of the southern one, will explain much that is very interesting in the building. The surfaces of all the domes and cupolas are cut into upward pointing scales, giving an effect a little like that of some fircones. It is a very handsome enrichment for its situation, but of course utterly inappropriate in a severe climate. All the external oofs are of stone — vaults above those visible from within, with a few feet between. This is without doubt the most monumental method which has been contrived by man of closing in a building, and it is a subject of repeated regrets that the destructive effects of cold debar us in the north from its use. It would succumb to the winters of New England or New York in a few years, yet in more temperate climates it endures for ages.

The tower of St. Front is an interesting piece of Romanesque work, weather-worn and bursting into vegetation apparently, the grasses and plants finding roothold in its crumbling masonry at every projecting ledge. The upper part only, a domed cupola upon closely-set shafts shows close relationship with the church. When the sketch was made this tower was the only part of the cathedral which restoration had not yet disturbed. R. W. Gibson.

FACADE OF THE CHURCH OF S. MARIA DELLA PIEVE, AREZZO, ITALY. MARCHIONNE, ARCHITECT.

This building which stands on the site of an ancient temple of

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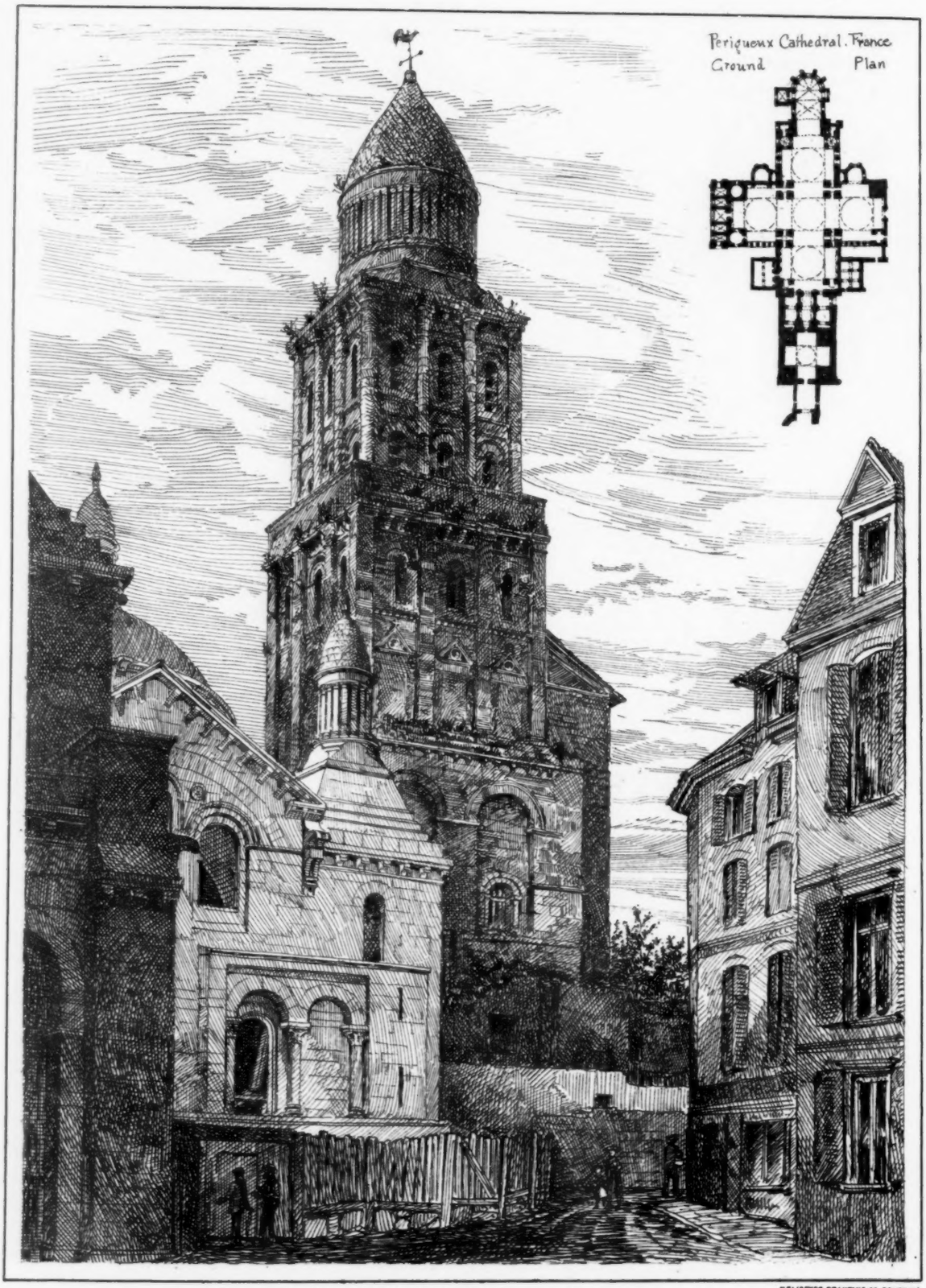

Tower Perigueux Cathedral France. Before Restoration
Restored North Transept and Nave

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Facade of the Church of S. Maria della Pieve Arezzo, Italy.
Marchionne, Arch't.

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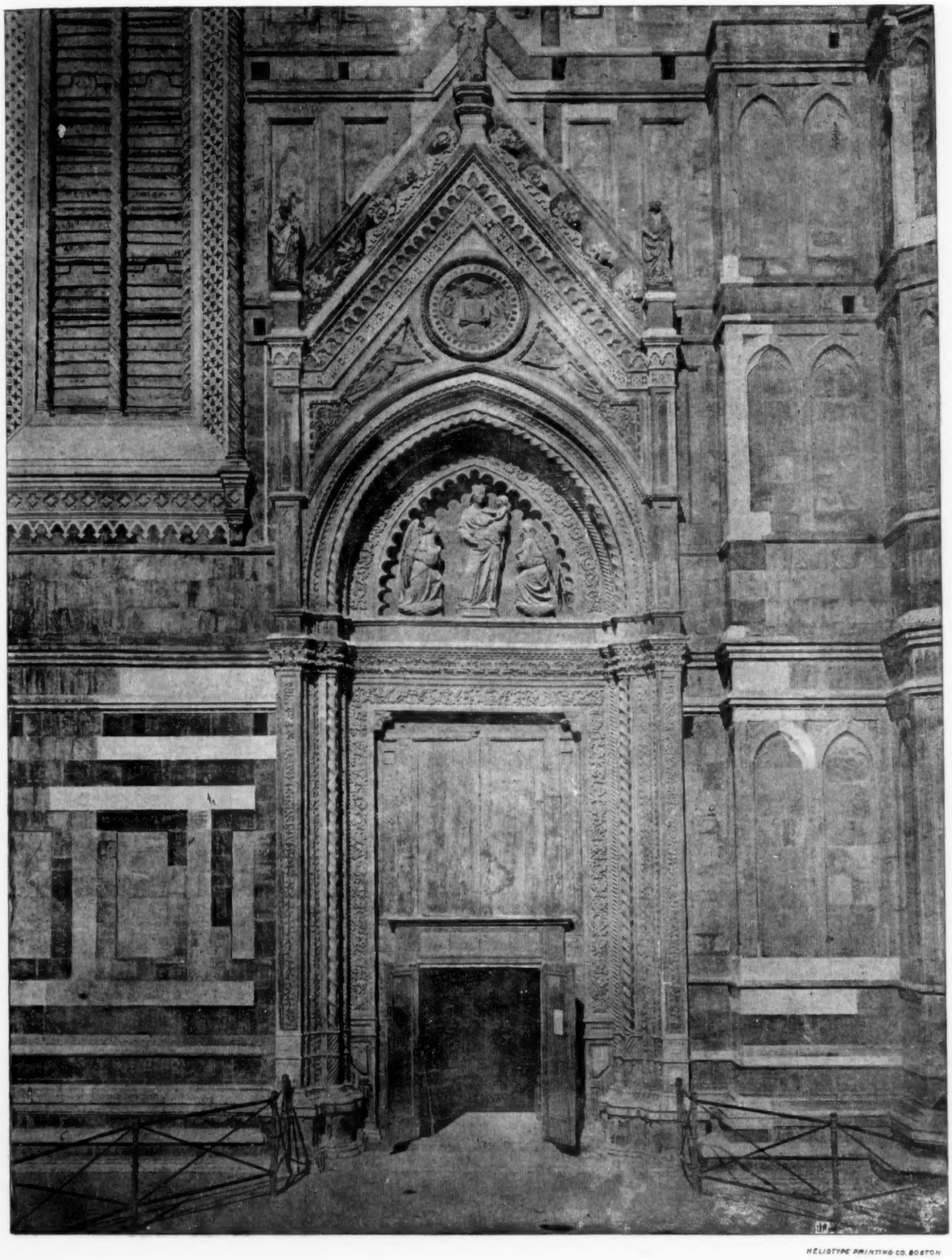

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South Doorway of the Cathedral, Florence, Italy.

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A HOUSE BY THE SEA.

JOHN CALVIN STEVENS, ARCHT. PORTLAND, ME.

— First Floor Plan —

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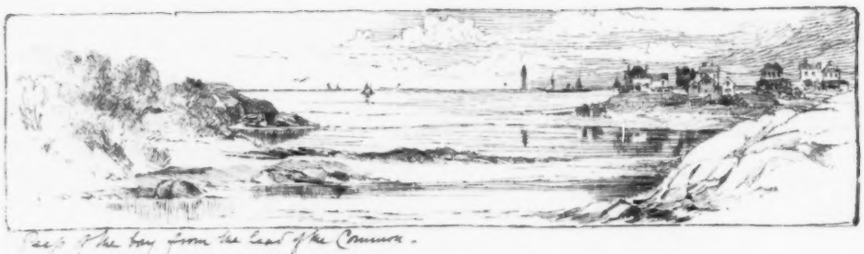


Head of the bay from the east of the Common.

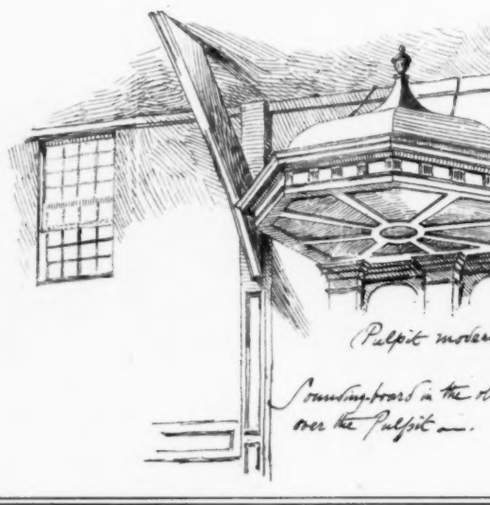
SKETCHES IN COHASSE MASS

by E. Eldon. Deane.

Old House on the Common.

Spire of the old Church built

Parsonage House built by Rev. N. Hobart - first minister of the old Church. 1721-4.



(Pulpit moder

Sounding board in the o
over the Pulpit

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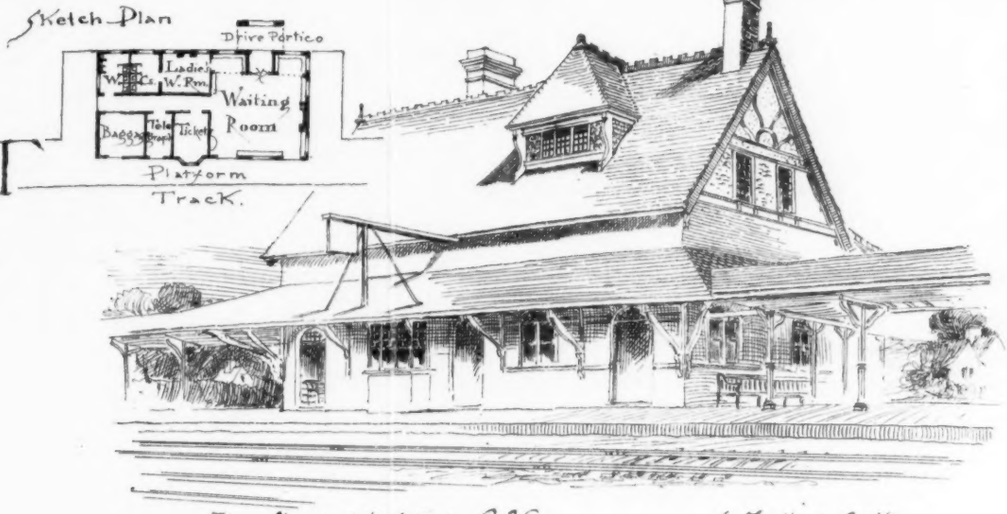
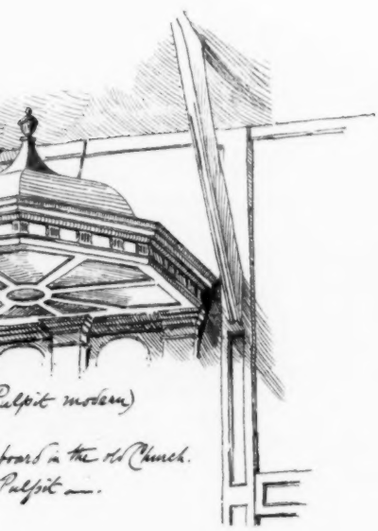


New Station of the Old Colony R.Rs. J. F. Hurd, Arch.t

Waiting Room New Station.

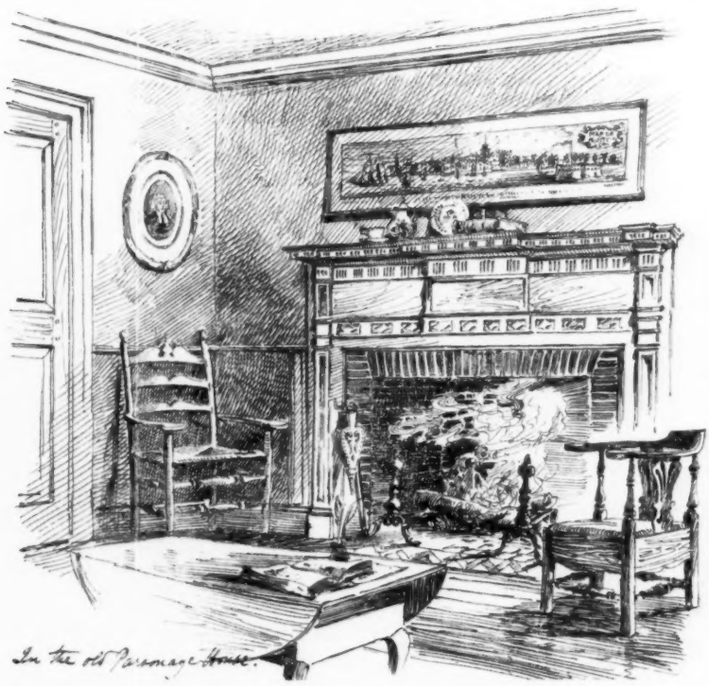
Church built 1741.



Pulpit modern)

stairs in the old Church.

Pulpit —



In the old Parsonage House.

HELIOTYPE PRINTING CO. BOSTON

Bacchus was begun in the ninth century. The façade here shown is, however, attributed to Marchionne, a local architect, and dates about 1216. The columns of its three arcades form either a very marked instance of the way in which architects pillaged older buildings in the interest of their economical clients, or a still more extraordinary striving after originality on the part of the architect.

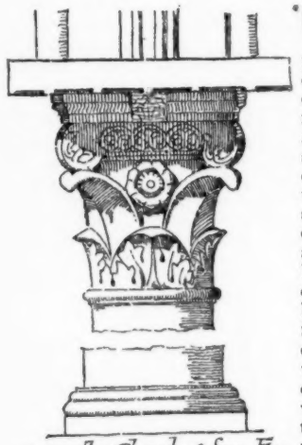
A SKETCH FOR A SEASIDE HOUSE. MR. JOHN CALVIN STEVENS, ARCHITECT, PORTLAND, ME.

THE sketch was one made last year in the course of business, but was abandoned for a smaller house. The estimated cost finished in pine was $10,000.

THE SOUTH DOORWAY OF THE CATHEDRAL, FLORENCE, ITALY.

SKETCHES AT COHASSET, MASS.

BOOKS.



From the Church of San Frediano. Pisa. - Italy.

ONE does not, as a rule, expect to find æsthetic, as distinguished from intellectual pleasure, in the study of a book on applied mathematics, but an exception would certainly be made in favor of Professor Lanza's book,[1] which possesses in a singular degree the charm which clear and forcible expression always gives, whatever may be the subject treated of. It is to be expected that definitions and axioms in mathematics would be stated with all practicable conciseness, but those in this book are so condensed, so brimful of concentrated thought, that one reads them over and over with increasing enjoyment. The definition of force, for instance, which Professor Lanza calls "a tendency to change the relative motion of the two bodies between which that tendency exists," is, to our mind, a masterpiece of scientific English.

Starting from this point, the author proceeds to show the proportion of forces to velocities and momenta; and leads us to the consideration of the path which a body would take if acted upon simultaneously by two forces acting in different directions, which he shows to be represented, for a unit of time, by the long side of a triangle of which the other two sides represent the paths which the body would pursue if acted upon by the two forces successively, each during a unit of time. This is, to us, a new method of reaching the subject of the "parallelogram of forces," or as he calls it, more exactly, the "parallelogram of motions," and it seems to us as much superior to the common mode of treatment in brevity and intelligibility as it is in scientific accuracy, and in the skill with which it is made to lead directly to the subsequent propositions of the polygon of motions, and the triangle and polygon of forces.

A few every-day problems, solved both graphically and algebraically, serve to indicate the application of these principles in the way best suited for fixing them in the minds of students, and form an excellent introduction to the analysis of trusses and frames, which, after the theory of dynamics has been discussed, introduces the practical part of the book. This subject Professor Lanza, unlike other writers, divides by a sharp line between roof-trusses and bridge-trusses, treating the former, among which he includes polygonal frames and funicular polygons, by the usual graphical methods, or rather, by an improvement on these methods, which consists in drawing the stress diagrams, and calculating the lengths of the lines in them by trigonometical processes, instead of trusting to the scale; but considering bridge-trusses only analytically, by the method of sections, which he considers to be more convenient in practice for such work than either the graphical or the graphical-trigonometrical processes. Many examples are given, both of roof and bridge trusses, the effects of wind-pressure are discussed, and constants given for the weights of different sorts of roofing materials, the whole chapter forming as clear and concise a treatise on the subject of the calculation of strains in roofs as architects or students could easily find. The only thing we can think of to increase its usefulness to them would be the addition of some illustrations of the common joints in wood and iron trusses, with, suggestions as to the estimation of the strains in pins and straps, and perhaps, the suppression of Hutton's wind-pressure formula and table, which, being based on erroneous premises as to the maximum force of wind, are worse than misleading, and the correction of the engraver's mistakes in some of the illustrations of strain diagrams, particularly Figures 85*a* and 86.

[1] "*Applied Mechanics*," by Gaetano Lanza, S. B., C. & M. E., Professor of Theoretical and Applied Mechanics, Massachusetts Institute of Technology. New York: John Wiley & Sons, 15 Astor Place, 1885. Price $5.00.

The subject of the transverse strength of beams follows that of stresses in frames, instead of preceding it as in the common text-books, and with it we find an immense amount of information as to the constants to be used, not only for resistance to transverse strain, but for tensile strength and power of resisting compression, in iron, steel, and various kinds of timber. Professor Lanza's tests of full-size beams and posts of wood have already been described in this journal, and most architects and engineers, as well as many builders, know that they have entirely upset the old rules on the subject, but the compilers of building-laws, and others who have not yet had their attention called to the matter, may, perhaps, be interested some time to find in this book not only an account of the tests, but a comparison of the results with the ancient standards, which is very instructive.

The latter portion of the book treats of arches in iron and stone. The usual method is given for passing lines of resistance through the voussoirs of a stone arch, and some sensible practical remarks are made, among these being the observation, which we think we never saw before in a theoretical work, that the actual vertical load on each voussoir of an arch in a wall is not, as is usually assumed, the weight of the slice of masonry, loaded or otherwise, over it, extending to the top of the wall, but is an unknown fraction of this, determined by the bonding of the brick or stone-work of the wall, the quality of the mortar, and the other circumstances which enable walls to support themselves, by the corbelling, as we say, over an opening, leaving only a certain remainder either to bear upon an arch, spanning the opening, or to fall down if the arch is removed. In regard to this corbelling action, which vitiates all our calculations in regard to arches in high walls, Professor Lanza well says that "we need experiments;" and until these are made and recorded with something of the accuracy and care which he has shown in his own tests of beams, we must be contented to leave the subject in its present unsatisfactory condition.

ANY one who has been in the habit of noticing in the English architectural journals the representations of buildings erected in India after the designs of English architects, must have felt that a sacrilege was being done to the canons of Indian art that Vishnu, Shiva and all the rest might be justified in avenging, if perchance the days of miracles had not passed away, as one is sometimes tempted to believe they have not when he reads of the magical performances of Indian jugglers. It is somewhat of a relief that the worst of the barbarisms of design are not committed by architects, but by civil or military engineer officials in the employ of Government, the East Indian Company, or the railroads. An unusually atrocious structure, a clock-tower at Delhi, is shown in a recent issue of the *Manufacturer's Gazette*, in which bastard Victorian Gothic runs riot.

It is a relief to turn from this to a book [2] of heliotype illustrations of bits of domestic Indian architecture, collected by Mr. De Forest during a protracted residence in India. In turning over these plates one gets a glimpse of what Mr. Fergusson means when he suggests that the coming architecture may be a revival of Indian forms and decorations adapted to European uses. It is possible that a modified Hindoo architecture may be the next "fad" the English architects, tired of coquetting with Queen Anne, will take up, but one can't help but pity in remote perspective the tribulation of the careful housewife if she is to be compelled to keep in immaculate freedom from dust all the crevices of this wonderful fret-work of carving and inlay.

The illustrations are unexplained by text, and though there are titles given, the dates and epochs are not, so that one cannot trace what are the determining causes of many features in which are discoverable traces of Chinese, Moorish and Arabic art; while in some cases, for instance, the doorway of a house at Multan, there is a very marked Renaissance feeling in the sculptured detail. In most cases one is free to imagine that the carvings are executed in stone, stucco, wood, metal or iron, according to his fancy or his knowledge of Indian art, feeling that because of the cheapness of labor in India it is quite as possible that one material should be used as the other.

To utilize this cheapness of skilled labor, is we believe, largely the aim Mr. De Forest had in putting forth this book which purports to show the kind of work which the skilled artificers he has got together in Ahmedabad can even at this day perform. We suppose there is a commercial side to the matter, but as it does not appear in this publication, we can blink it in considering the book, and only regard the other claim that is advanced — that it is an outward indication of an attempt to prevent the entire extinction of native skill and art instinct by the advance of Brumagem and its vandal hordes. Just what use to-day can find for Indian art in its grosser constructional forms it is hard to say: they would probably look as out of place in New York or London as the English architecture of the day does look like an architectural tramp at Delhi or Singapore. But for the smaller features, the surface ornamentation particularly, we believe there can be found many uses which will suggest themselves to any designer who sees these, or similar plates. There is nothing here to show that the Hindoo of to-day can work as deftly as the men who wrought these delicate and graceful geometrical screens, these fretted panels that make one forget that the designers were very paladins of plane geometry, so easily do they seem to fit into their alloted place

[2] "*Indian Domestic Architecture.*" New York: Lockwood De Forest, 1885.

in the sketch; but we do know that Major Keith caused to be designed and carved for the Calcutta Exhibition an elaborate gateway of considerable size, for the purpose of showing that the native of to-day is still able, given the opportunity, to do the work on as airy and refined a structure as the Taj Mahal, if there can be found the master-hand to design it. These efforts to preserve from entire extinction the native art of India is deserving of all praise, and we trust that similar but more organized attempts will be made to preserve the art of the Japanese and Persian artists from being overwhelmed by the advance of the London and Parisian upholsterer.

Two little hand-books of very dissimilar interest and value by the same author are issued by different publishers. The contents of one [1] of them appeared in our own columns a couple of years ago, and such value as it has is rather of an archæological and encyclopædic than practical nature. Still any one who has a desire to study up the history and development of that most unpleasant article, the water-closet, will find that Mr. Brown has brought the facts together in their proper sequence, though he has contributed little to the development of the still-to-be-attained perfect closet by comment or discussion, the greater part of the book being essentially mere abstracts of the patent specifications describing the several closets, many of which were presumably never put on the market. The most interesting portion of this book is that describing the methods of disposing of excreta practised at Rome in the Middle Ages.

The other little hand-book[2] much more attractive in make-up, better illustrated and more valuable from the practical stand-point, deals with foundations, and is a reprint of a series of articles which we should have said we first saw in the *Sanitary News* but which are here credited to the *Sanitary Engineer*. The subject is an important one; too much care cannot be taken in securing the proper drainage of the cellar and foundation trenches, as we had unpleasant proof of not long ago when building a house on the very top of a hill, the highest level within a considerable area. The soil was a very stiff hard-pan and was found to be almost bone-dry at the level of the cellar floor, a little water only standing in the trenches, so, as it was very severe digging, the drain was only carried a short distance and ended in a dry-well. Still, as there was a possibility of trouble, the floor was not concreted. All went well till the middle of February, the floor remaining dusty, then dampness appeared, and at length in consequence of thaws and rains several springs declared themselves in different places. Bailing was at first tried, then a pump was rigged through the parlor floor, discharging through a window, and a gang of men tried for days to pump out the cellar as if they were trying to keep a ship afloat. All was in vain and finally, though mid-winter, a drain three hundred feet long had to be dug from the bottom of the trenches to the brow of the hill before the eighteen inches of water could be drawn off. Any one who does not desire such an experience as this will do well not to trust to appearances but make thorough work of his foundation drainage after some of the many methods described by Mr. Brown.

Among the little books which accumulate on our table much more rapidly than those of greater bulk and cost, the one of greatest every-day value is a very ingenious set of tables [3] for determining at a glance the number of treads that can be worked into a given run and the number of risers needed to reach from one floor to the next. The mode of using the tables is clearly explained and readily understood, and they are of such practical benefit that every office should have three or four copies, not only because several draughtsmen might wish to use them at the same time, but because being quite small they would easily get mislaid under drawing-boards or papers.

Another little book,[4] an amusing little book because it is written by a sensible man who has a *penchant* for getting up little books about things which many people would think were too common to write about, contains, quite unarranged, the desultory bits of advice that the writer, a layman, would give to any one intending to build a house. We ran through its thirty pages first with the expectation that we should come upon a number of the half-witless suggestions that even a usually sensible man may make when attempting to give instructions on subjects outside of his usual occupation. But though we found some things that are not quite "according to Gunter," there is really little to find fault with. We then turned over the pages again in the hope of finding a hint or two that even the trained architect might welcome, but found only this: "The flues should have large man-holes in them in the attic, so that large openings can be made in them to draw off hot-air in summer. These holes may be covered with sheet-iron in winter. I made my attic cool and comfortable by this means, after a servant had given me warning that the upper room was too hot to live in, and it cooled the whole house;" a manner of phrasing which leaves one in doubt whether the servant's "warning," or the chimney-opening was the efficient cause, and hence the subject of the recommendation. The idea is ingenious, but should only be carried into effect under competent advice, and even then should be only used in the house of a careful man who will surely see the sheet-iron door properly closed before the autumn fire is lighted. To most of the pithy recommendations we can say amen.

The smallest book [5] of all is in the form of a note-book for the vest-pocket, bound in pliable Russia leather, with rounded edges, and relatively to its bulk is as valuable as any, far more valuable than one would suppose on first turning over its pages, since it has the appearance of being a money-getting undertaking, advertisements appearing with unpleasant prominence on every page, and seriously inconveniencing any one who seeks to make use of the data, tables, laws, etc., which are supposed to form the subject-matter of the book. The advertisements which all relate to building affairs are useful too, but they would have been quite as useful if set in uniform and less obtrusive type. The compiler has had the good sense to do what other compilers have generally neglected, that is, he has, as a rule, named the authorities from whom he has drawn his statements, so that one may feel reasonably safe in putting this booklet into his pocket, and really making use of it "on the job" when the rest of his library is not accessible. But the difficulty of finding what one wants, notwithstanding that there is an index, because of the confusion caused by the advertisements makes us feel that it would be more judicious to spend one's dollar in another way.

Two other marvellous little hand-books have also come to hand, one [6] of which begins with the "pithy fact" that the aggregate circulation of the daily newspapers in this country, is 4,800,000, and ends with the statement—much more pithy, by the way,—that the poorest of twelve millionaires named, Baron Rothschild, is worth $15,000,000; while the other,[7] beginning with a table showing how logs may be reduced to board measure, ends with a collection of album selections, the last one running:—

> For something original
> I've been puzzling my brain
> At last I've concluded
> To just sign my name.

These useful — or useless — little books contain a most varied collection of information: tables of board measure, weights, population, interest, rainfall, temperature, presidents, fastest one-mile time, distances, mortality, lengths of rivers, heights of mountains; lists of literary pseudonyms, meanings of personal names, notable bridges, tallest towers; the popular names of states and cities; facts concerning government, business, history, and much else which one simply looks over and wonders whether it is all true.

THE USE OF IMPERVIOUS COVERINGS ON FLOORING OF WOOD.

At the present moment considerable attention is being given to the subject of impervious coverings on flooring of wood, and the admitted hasty decay of the same has raised the question whether it is traceable to want of ventilation on the underside or to the covering on the upper face.

The use of wood as a ground-floor material is matter of recent history, flooring of brick or stone being general in former times. During the last quarter of a century wood, from the abolition of the duty, and the introduction of machinery, has been cheapened to such an extent that it is no longer a luxury for flooring, but the cheapest material that falls to the hands of the builder.

It is an undoubted fact that free ventilation on the underside of

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[1] "*Water-Closets.*" An Historical, Mechanical, and Sanitary Treatise. By Glenn Brown, Architect, A.A.I.A. New York: The Industrial Publication Company, 1884.

[2] "*Healthy Foundations for Houses,*" with 51 Illustrations. By Glenn Brown, Architect, A.A.I.A. Reprinted from the *Sanitary Engineer*. New York: D. Van Nostrand, 1885.

[3] "*Treads and Risers.*" Architects' and Stair-Builders' Table of Treads and Risers. By John A. Hamilton, Architect. New York: W. T. Comstock, 6 Astor Pl., 1885.

[4] "*Hints on House Building.*" Some desultory notes in popular form, reprinted from the *Mechanical News*. By Robert Grimshaw. New York: F. Treadwell, 78 Nassau St., 1885.

[5] "*Useful to Architects,*" and all interested in Building. Practical information upon special matters relative to exterior and interior work, with a directory of builders, masons and contractors. Valuable tables, memoranda and formulæ. Price $1. New York: B. G. McKay, 1168 Broadway, 1885.

[6] "*Look Within*" for 5,000 facts that every one wants to know. The pith of many books, compiled by W. R. Adams. Chicago: A. H. Andrews & Co., 1885.

[7] "*Gaskell's Hand-Book of Useful Information,*" for Merchants, Professional Men, Mechanics, Farmers, etc. Compiled by E. A. Gaskell. Price 25 cents. Chicago: George W. Ogilvie, 230 Lake St., 1884.

wood flooring is beneficial to its preservation; but whether the flooring is sealed down on the upper side or not with floor-cloth, kamptulicon, etc., it is subject to decay in the warm or summer season, for there is invariably sufficient moisture and heat to propagate fungi, of which family the destroying agent of wood is a member.

In the last century the belief was general that ground-floors in wood could be preserved by the spaces between the joists being levelled up with dry or quick lime. We have seen flooring so laid on oak joists in use for over a century, and when removed found to be in fair condition, but only in the instance of their being laid over brick arches covering basements. If this system were followed in floors immediately over the soil, the result would not be satisfactory. Nevertheless, lime in proximity to wood, if kept fairly dry, is a preservative of no mean order, proof of which is afforded by plasterer's laths, timbers built in walls, and vessels used in the lime trade.

With regard to the free ventilation of the spaces beneath wood flooring, this is rarely necessary in floors above the ground level, as moisture is not present in these cases in sufficient volume to propagate the dry-rot fungus. In the instances of ground-floors, free ventilation often becomes an evil to the inmates of the houses, in the air passing through the flooring, skirting and other wood-work to the interior of the rooms, and rendering them so cold in the winter season that the fires have little power in warming the apartments. This evil may be remedied by the ventilators being closed in the winter, for there is no fear of the wood decaying at this cold season.

Free ventilation, as we call it, is not always insured by air-grates below the level of ground-floors, for the air may become so charged with moisture in these confined spaces that it will not, owing to its weight, move in the manner intended by the builder. There is a tendency in cold, humid air to occupy a low level, and it is not a safe rule to rely upon side ventilators to deal with such strata. An excellent plan for dealing with the air beneath basement floors is to build up, along with the chimneys, flues for its extraction.

The use of impervious covering on the face of ground-floors is to be condemned. Wood is a porous substance, and the air beneath is constantly passed through the boards, being drawn by the more rarified character of the air in the apartments above. The same action obtains with upper floors, and ceilings beneath the roof, lath-and-plaster offering no impediment, so long as it is not painted. In proof of this you will find in ceilings not regularly whitened, the spaces to be dark, owing to the soot-laden air being filtered as it passes through the plaster, whilst the plaster covered by the joists above is light, and hence the white marks across old ceilings indicating the lines of the joists.

That moisture does pass through such floors we can give proof in the case of a first floor of some property which had been erected over fifty years. The ground-floor was used as a cooking and work kitchen. This floor was covered with oil-cloth, by which the air was prevented from freely passing through the ceiling and the floor boards. The boards themselves became damp on their undersides and swelled, which caused the lines of the joints to rise on the upper face, and the floorcloth to present a series of ridges and furrows, every joint of the flooring being clearly marked.

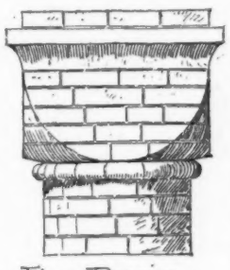
We had our attention called to the wood floors of an exchange building, where the basement was used as a restaurant. Between the joists, at certain points, steam-pipes were fixed under grating for warming purposes, the face of the board being covered with kamptulicon; there, in the winter season, during which, under ordinary circumstances, the flooring would be safe, dry-rot fungus was engendered, and to such an extent did it propagate that in four years, owing to the presence of heat and moisture, the floor was destroyed. A new floor was laid, and the system of impervious covering was abandoned, since which no sign of dissolution has presented itself. The reason of this is to be found in the fact that with the impervious covering removed, the heat, in the absence of confined moisture, was unable to propagate wood-fungus or dry-rot. In the instance of ground-floors, dry-rot will present itself if the boards are sealed down with impervious covering; the natural tendency of the moisture of the ground to rise through the boards is here retarded, and the side ventilation is not sufficiently effective to prevent the growth of dry-rot fungus.

The life of such a floor will vary with circumstances. Its dissolution will not be so rapid as when associated with artificial heat in the form of steam-pipes; but if the sub-soil be clay, and the space between the soil and the board is not great, the floor would require to be renewed every six or seven years. If the subsoil were dry in its character, and the space between the soil and the board ample, a double lease of such life might be given, but ultimate dissolution could not be unlooked for.

We have an instance before us of a new floor in a new building, such floors being covered with kamptulicon being destroyed by dry-rot in six or seven years. A second floor has been put down, and the covering discarded. The floor of an adjoining room which has not been covered with kamptulicon shows no signs of decay. The dissolution is thus clearly traceable to the use of impervious covering. The investigation of this subject brings to light the fact that impervious coverings for wood floors are to be condemned, and it affords a clue to the unhealthful character of certain dwellings, for plaster ceilings and wood floors offer no guarantee against bad or impure air from bad ground, decomposed wood, faulty drainage, etc., rising into the apartments and polluting the atmosphere breathed by the inmates.

As a reform in the building trade connected with the immediate future we may look for great attention being given to the subject of damp-courses, damp-layers, and block-paving in wood, by which the damp of the ground is prevented from rising into the interior of the building, and air-spaces beneath floorings of woods are rendered unnecessary.—*Building News.*

THE OLD ROMAN FORUM.



From Pavia, Italy.—12th Cen.

IT has frequently been stated that the existing pavement of the central area of the Forum is higher than it was in the first century, and that its present level only dates from the third or fourth century A. D. This, however, is not the case: the marble plinth of the existing Rostra, part of which is still *in situ*, shows clearly that the existing paving of great blocks of travertine is exactly at the same level that it was in the time of Julius Cæsar, and probably very much earlier. The removal of the road which crossed the western end of the Forum by the Arch of Severus has at last fully exposed to view the Rostra of Julius Cæsar. Its remains show it to be very much larger and quite different in form from what had always been anticipated. In the first place it is a rectangular structure, not curved on plan, as earlier antiquaries had been led to expect from a doubtful reverse of a denarius of the gens Lollia with the legend Palikanvs. It is, however, almost certain that this coin does not show the Rostra of the Roman Forum, but has a conventional representation of some harbor with a row of ships at anchor, only the beaks of which appear. The existing remains show distinctly that the Rostra was a large platform, with no curve in its front wall, about seventy-eight feet long, and eleven feet high above the level of the Forum paving. Its end and side walls are built of carefully worked blocks of tufa, two Roman feet thick, two wide, and of various lengths; each block was neatly clamped to the next by dovetail wooden dowels. This tufa wall stands on a foundation formed of massive blocks of travertine. A great part of this wall has been removed for building material, but at the south angle it is nearly perfect, and a great deal of it remains along the whole of the front. One of the chief points of interest about this front wall is the existence of the holes by which the bronze beaks of the Latin ship (*rostra*) were fixed. Each beak was secured by two metal bolts two and one-half inches in diameter passing through the whole thickness of the wall, and they were arranged in two tiers at intervals of about four Roman feet from centre to centre; there were nineteen Rostra in the lower tier, and twenty in the upper one. These were the original beaks taken from the older Rostra by Julius Cæsar and refixed to the new tribunal. The *rostra* of the upper tier were set in the centre of the spaces between those of the lower tier. The discovery of these holes agrees with what is shown on the sculptured *plutei* which were discovered a few years ago on the north side of the Forum. A relief on one of these, representing the Emperor Trajan standing on the Rostra and addressing a crowd in the Forum, shows distinctly the beaks arranged in two tiers exactly as is indicated by the existing holes.

The whole of the tufa wall which forms the front and sides of the Rostra was lined with slabs of white Athenian marble, with a richly-moulded cornice and plinth at the top and bottom. Part of the moulded plinth still exists *in situ* at the end close by the Arch of Severus, though at that point the tufa wall, which the marble covered, has been removed. Each length of the marble plinth was very carefully fixed to the adjacent blocks of marble and also to the tufa wall behind it by strong clamps, some of iron and some of bronze, with their ends turned down and run with melted lead; and the whole marble casing of the wall was fixed in a similar way. None of the marble cornice remains in its place, but a number of pieces of it have been found scattered round the Rostra.

It is a very well-designed and carefully-worked cornice, and along its top bed a deep groove is cut, into which was fitted a low marble screen or *cancellum*, only one fragment of which exists, intended to keep people on the Rostra from falling off it. On one of the blocks this groove stops short, showing that there was a break in the screen, and this again proves the accuracy of another ancient relief, which shows a front view of the Rostra. This valuable representation occurs in one of Constantine's reliefs on his triumphal arch, in the band over one of the side archways. On this is shown the Emperor Constantine addressing the people from the Rostra, with other buildings and monuments of the Forum represented in the background, all of which can easily be identified. On this relief the low screen is shown along the greater part of the front, but in the middle there is a break, so that the figure of the imperial orator is visible at full length. Without this interesting relief it would have been difficult to explain why the groove for the *cancellum* stops short on one of the existing pieces of cornice. On one occasion this opening in the screen must have been of special use — namely, when Mark Antony exhibited to the vast crowd in the Forum the bleeding body of the murdered Julius Cæsar, who had completed the Rostra but a few months before his death. It was probably to some part of this

screen that Antony, in the following year, fixed the head and hands of his enemy, the aged Cicero, in revenge for speeches which he had delivered from this very place. —*London Saturday Review.*

THE NINETEENTH ANNUAL CONVENTION, A. I. A.

Secretary's Office, 10 Catharine St.,
Newport, R. I., August 31, 1885.

To ——: —

Dear Sir, — The Nineteenth Annual Convention of the American Institute of Architects will convene on Wednesday, the 21st of October next, in the Senate Chamber of the State Capitol at Nashville, Tenn. The sessions of the Convention to continue through both Wednesday and Thursday, October 21st and 22d.

The Committee of Arrangements appointed by the Board of Trustees, has made every effort to perfect a complete and attractive programme for both the business and social meetings. They have been greatly aided in this connection by the courteous offers of hospitality received from the citizens of Nashville.

The complete programme of exercises has not yet been perfected in all its details; but it is deemed advisable to issue at once a general circular, giving to members of the A.I.A. an idea of the scope and aims of the approaching Convention.

This outline sketch of programme is in brief, as follows:

1. An exhibit of architectural drawings and building materials in the rooms of the Art Association of Nashville. To the exhibition of drawings it is hoped that contributions will be sent by many members of the Institute.

The building materials exhibited will be such as are known to Tennessee.

2. *First Day*, Forenoon — Meeting of the A.I.A. Afternoon — Visit to some of the principal buildings in and around Nashville. Evening—Public Reception and Concert complimentary to the A.I.A. by the Art Association of Nashville.

3. *Second Day*, Forenoon—Meeting of the A.I.A. Afternoon—Visit to "Belle Meade," the famous stock-farm of General Harding. Evening—Banquet complimentary to the A.I.A. by the Art Association of Nashville.

It will also be the endeavor of the Committee to present several papers upon technical and artistic topics, to be followed by short discussions.

The second circular, to be issued about the 1st of October, will give the whole programme for the Convention in detail, with routes of travel, cost of transportation, and reduced rates for hotel accommodation at Nashville.

Appended to this circular will be found a letter from the Secretary of the A.I.A. to the *American Architect and Building News* of August 22d, setting forth the importance of the approaching convention to the interests of American architecture, together with the earnest desire of the Committee of Arrangements, and the Board of Trustees, to make it a success in every particular. The Committee trusts that you may be able to be present at the Convention, and that you will also endeavor to induce other members of the Institute to join you in visiting this, our first Southern meeting.

Respectfully submitted,

William C. Smith,
W. L. B. Jenney,
George C. Mason, Jr.,
A. J. Bloor,
Committee of Arrangements.

All letters and communications relating to the Convention will be received by William C. Smith, Chairman of the Committee, 1 Berry Block, Nashville, Tenn., or

George C. Mason, Jr., *Secretary, A.I.A.*

NOTES AND CLIPPINGS.

The Decay of Wood. — In some tests made with small squares of various woods buried one inch in the ground, the following results, says the *Garden*, were noted: Birch and aspen decayed in three years; willow and horse chestnut in four years; maple and red beech in five years; elm, ash, hornbeam, and Lombardy popular in seven years; oak, scotch fir, Weymouth pine, and silver fir decayed to a depth of one-half inch in seven years; larch, juniper and arbor-vitæ were uninjured at the expiration of the seven years.

Members for a British Academy. — Rather more than a year ago the American journal, the *Critic*, asked for the opinions of its subscribers as to the forty Americans who, in the event of the establishment of an American Academy after the model of the Académie Française, would be first entitled to become members of it. This summer an imaginary British Academy has been formed by a similar process. The forty chosen ones are: Lord Tennyson, Prof. Huxley, W. E. Gladstone, Prof. Tyndall, G. A. Sala, Mr. Ruskin, Herbert Spencer, Matthew Arnold, Sir H. Thompson, W. Black, Sir J. Lubbock, Duke of Argyll, Leslie Stephen, George Meredith, Sir Richard Owen, Cardinal Newman, Mr. Browning, R. A. Proctor, Mr. Froude, John Morely, Lord Dunraven, Henry Irving, A. C. Swinburne, E. A. Freeman, Walter Besant, Edward Arnold, G. Macdonald, Justin McCarthy, James Payn, Mr. Wills, W. Morris, Prof. Blackie, Archdeacon Farrar, Baring Gould, Wilkie Collins, Lord Lytton, Prof. Skeat, Andrew Lang, Prof. Gardiner, and Austin Dobson. Some great names are conspicuous by their absence from this list, but the selection is not upon the whole an unrepresentative one, and it is particularly interesting as showing the extent to which, thanks no doubt to the cheapness of the reprints supplied to them, our American cousins pursue the study of our most modern literature. It would be well if the transatlantic appreciation of the labors of these and other living Englishmen meant proportionate remuneration to our unfortunate authors. It may be satisfactory to a writer to know that his books are read by thousands of sympathetic men and women who live between New York and San Francisco; but at present he is sadly conscious that his American popularity profits him little or nothing. The publisher who sells a reprint of "The Data of Ethics" for 10 cents does not, we imagine, contribute very largely to Mr. Herbert Spencer's income; and he must be indeed a philosopher who can find consolation for having been robbed in the fact that he has been elected a member of an academy in Utopia. — *London Daily News.*

The August Fire-Loss. — The New York *Daily Commercial Bulletin*, of September 4, estimates the fire-losses in the United States and Canada, during August, at $5,500,000. This is a decided improvement upon former records, the average aggregate of fire-loss in August or ten years past being $7,000,000. In August, 1884, the fire-loss was about $10,000,000. The *Bulletin* thinks there is ground for encouragement in so favorable an exhibit. Nevertheless the fire-losses of the year, to the end of August, foot up $65,500,000, with four months yet to hear from.

How the First House in San Francisco was roofed. — I will add a short account of the building of the first house in what is now the great city of San Francisco, for I never have seen any correct relation of it. The house was built by William Richardson, an Englishman, in 1836. It was of adobes—squares of sun-baked clay, about four inches thick, and some twenty inches, or so, square on the surface. The house was put up on a hill or rising ground, 300 yards, more or less, from the beach used as a landing. Richardson had, some years before, married into the Sanchez family. His wife was a most excellent woman, far too good for her husband, who was an idle, dilatory man, not without intelligence, but without force or decision of character. After the walls were up, rafters for a steep roof were put in place and secured with strips of raw-hide. It was Richardson's intention to cover over with tiles taken from some of the old abandoned houses at the Mission. But without doing so at once, feeling too confident of a continuance of dry weather, he put his wife, four or five children, and all his household belongings into it and began housekeeping. Unhappily, he had delayed too long with his roof; it came on squally one afternoon with rain, and the edge of night was drawing near. Richardson rushed to the beach like one frantic, and signalled for a boat. I guessed the trouble. Before he got over the gangway he called out: "Oh you see my distress! Indeed, indeed, we are all in a sad plight, for all I care for or have is exposed to the weather. Sell me or loan me some old sails to shelter us as quickly as possible." "Not another word, Richardson," I said. "You shall instantly have all the help this ship can give you." All hands were turned up, away went the men aloft, the fore and maintopsails were unbent and lowered into the launch—two boats, with the second officer and their crews, pulled with quick and strong strokes to the beach; active and willing hands, well used to handling canvas promptly covered over house and household. This was the first roof to the first house built in San Francisco; and that house stood long enough to have a history, for in after years it was used as a post-office and as a custom-house; and the first man executed by the "Vigilance Committee" was hanged from it. — *Correspondence of the New York Evening Post.*

The North Sea Ship-Canal. — News comes from Berlin that the long contemplated ship-canal from the Baltic, through Holstein, to the North Sea, is at last likely to be made. The cost of the undertaking is estimated at nearly $40,000,000, of which one-third is to be borne by Prussia, the remainder being distributed over the other parts of the German Empire. The Government is now engaged upon the details of a measure for the furtherance of the whole project, which is spoken of as a work of peace proper to be undertaken in a time of peace. The German scheme is not the first plan of the kind for facilitating communication between the Baltic and North Seas. It is now just a century since the so-called Eider Canal was opened for traffic by the Danish Government. This waterway traverses the peninsula between the port of Kiel on the east and the mouth of the River Eider on the west coast of Schleswig-Holstein — between which provinces it forms the frontier — the "canal" being, in fact, constituted for half its length of the deepened bed of the river. Projected on such an insufficient footing, the passage of the Sound, Cattegat and Skager Rack is still enforced upon all ships of more than nine feet draught sailing from or returning to the Baltic ports. It was obvious that the construction of a canal on some more commensurate scale could be only a question of time. The revenue that must accrue from the diversion of the traffic from the circuitous northern route to a short cut through the neck of the peninsula; the saving to shipping of time, risk and wear-and-tear — these considerations have been weighed by the German Government, with the result which is now shortly to be made apparent. The new waterway will make Kiel one of its termini, from which port it will run in a south-westerly direction until it debouches in the estuary of the Elbe. The distance to be traversed is about sixty miles, and the canal is designed to afford easy passage to vessels of the heaviest tonnage. Thirty years ago some 20,000 ships used to pass through the Sound annually, the dues upon which were worth $750,000 per annum to Denmark; but at a convention of fifteen of the chief maritime States, held in 1857, these dues were commuted by the payment of a lump sum of $16,500,000 to the Danish Government. The hostility with which the new undertaking appears to be regarded in Denmark is not, therefore, quite reasonable. Such a canal has been looked forward to by the mercantile marine of all nations almost as a commercial necessity; and since the absorption of Schleswig-Holstein by Germany its construction by that power has been regarded as an inevitable consequence of the political event. At the same time Denmark can hardly, perhaps, be expected to view the project with indifference; and the withdrawal of so many vessels from her much reduced coast line must be allowed to have an appreciable bearing upon her future prosperity. —*Iron Age.*

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

BUILDING PATENTS.

[Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.]

324,803. CLAMP.—Fredrick J. Bancroft, Pawtucket, R. I.

324,818. LOCK.—George B. Cowles, New Britain, Conn.

324,819. SASH-BALANCE.—Levi M. Devore, Freeport, Ill.

324,830. SASH-FASTENER.—Lee S. Garrett, Fulton, Ky.

324,841. APPARATUS FOR UTILIZING THE WASTE HEAT FROM RANGES.—William T. Holland, Brooklyn, N. Y.

324,842. SCROLL-SAWING MACHINE.—Henry L. Hopkins, Caro, Mich.

324,847. WOOD-TURNING LATHE.—William A. Kettenring, Defiance, O.

324,855. DRAWING-BOARD.—Charles N. Leonard, Indianapolis, Ind.

324,860. PROCESS OF DECORATING PAPER AND OTHER MATERIALS WITH OIL-COLORS.—Mary B. Martin, New York, N. Y.

324,874. SWING-JOINT FOR STEAM.—Horace J. Morton, Chicago, Ill.

324,883. SASH-FASTENER.—Edward T. Prindle, Aurora, Ill.

324,885. SASH-HOLDER.—Frank L. Rosentreter, Cleveland, O.

324,914. FIRE-ESCAPE.—Edward H. Bergmann, Cimarron, N. Mex.

324,915. GONG DOOR-BELL.—Rudolph R. Buehler, Philadelphia, Pa.

324,929. SUPPORT FOR STEAM-PIPES.—John Finnegan, Philadelphia, Pa.

324,941. FABRIC FOR WALL DECORATION.—John Klee, New York, N. Y.

324,943. TRANSOM-LIFTER.—Albert Langstrom, Council Bluffs, Ia.

324,971. FIRE-ESCAPE.—Richard Woolliscroft, Streator, Ill.

324,977. AUTOMATIC FIRE-EXTINGUISHER.—Chas. Barnes, Dayton, Ky.

324,989. SHUTTER-WORKER.—Jehiel C. Driggs, Newark, N. J.

324,994. METALLIC ROOFING.—Frank A. Guthrie, Gallipolis, O.

325,001. WRENCH.—John McLean, Camden, Ala.

325,010. WRENCH.—Daniel R. Porter, Revere, Mass.

325,028. LOCK.—Charles F. Veit, London, Eng.

325,032. CHIMNEY-CAP.—Jerome W. Wetmore, Erie, Pa.

325,036. COMBINED CALIPER PROTRACTOR, AND BEVEL.—Frederick W. Woodhull, Lincoln University, Pa.

325,090. WALL-COVERING.—George Jordan, New York, N. Y.

325,142. FIRE-ESCAPE.—John H. Wilson, Camden, N. J.

325,153. OVERFLOW-FIXTURE TRAP.—Frederic L. Brown, Scranton, Pa.

325,157. HANDSAW.—George N. Clemson, Middletown, N. Y.

325,169. PAINT COMPOSITION.—Platt C. Connell, Chicago, Ill.

325,172. SHEET-IRON LOCK-JOINT SPILE.—Hirom C. Herron, Cleveland, O.

325,180. FIRE-ESCAPE.—Franz Kogoschek, Hoboken, N. J.

SUMMARY OF THE WEEK.

Baltimore.

HOTEL AND STORES.—W. F. Weber, architect, has prepared plans for P. Fitzpatrick for a three-st'y brick and brown-stone building to be used as a hotel, 62′ 6″ x 64′, and 3 three-st'y brick and brown-stone buildings, 18′ x 62′ each, adjoining, to be erected on Charles St., near the Falls, and to cost $25,000; August Dagenhart, builder.

BUILDING PERMITS.—Since our last report twenty-four permits have been granted, the more important of which are the following:—

S. Richmond, three-st'y brick building, s e cor. Harford Ave. and Hoffman St.

Fredk. Cook, three-st'y brick building (sq.), n s Sarah Ann St., bet. Pearl and Pine Sts.

Church of Our Saviour, three-st'y brick parsonage, s w cor. Broadway and McElderry St.

Colin Stewart, three-st'y brick stable, s e cor. North and Mt. Royal Aves.

Bernhard Link, 2 two-st'y brick buildings, e s Port Alley, bet. Lancaster and Aliceanna Sts.

W. A. Moale, 6 two-st'y brick buildings, s s Ostend St., e Light St.; and 2 two-st'y brick buildings, n s Gittings St., in rear.

Jas. P. McGovern, 2 three-st'y brick buildings, w s Aisquith St., n Preston St.

E. Berkley, four-st'y brick building, 25′ x 64′, s s Franklin St., w Howard St.

J. W. Stewart, 21 two-st'y brick buildings, com. n w cor. Hanover and Barney Sts.; and three-st'y brick building, n s Barney St., w Hanover St.

F. Wilkerson, 3 two-st'y brick buildings, w s Stockton Alley, bet. Edmonson and Harlem Aves.

Morgan Bros., 3 two-st'y brick buildings, n s Stockholm St., bet. Pinkney Alley and Washington Road, Chas. F. Namuth, three-st'y brick building, w s Washington St., n Jefferson St.

Boston.

COURT-HOUSE.—Mr. John McArthur, Jr., architect of Philadelphia, will serve with the court-house commission as expert to decide upon the merits of the preliminary plans to be submitted September 16 for the new court-house.

BUILDING PERMITS.—*Wood.—Swett St*, near N. Y. & N. E. R. R., mechanical, 25′ x 40′; owner, Bradley Fertilizer Co.; builder, C. Tilden, Jr.

Condor St., near Putnam St., dwell., 20′ x 28′; owner, William Davis; builder, Vincent McIsaacs.

Allston St., near Melville Ave., dwell., 29′ x 32′ 6″; owner, Arthur H. Vinal; builder, E. Shapleigh.

Allston St., near Melville Ave., dwell., 25′ x 31′; owner, Arthur H. Vinal; builder, E. Shapleigh.

Adams St., cor. Malvern St., stable, 25′ x 30′; owner, Mrs. W. Tileston; builder, F. M. Severance.

Cottage St., near Clifton St., dwell., 24′ x 31′; owner and builder, W. W. Dromney.

Washington St., No. 2478, storage, 66′ x 100′; owner, P. B. Smith; builder, Peter Hutchinson.

Winthrop St., near Blue Hill Ave., dwell., 22′ x 28′; owner and builder, W. H. Handy.

Armandine St., near Milton Ave., dwell., 25′ x 28′; owner and builder, Ephraim Moulton.

Washington St., near Melville Ave., dwell., 40′ x 40′, owner, S. J. Capen; builder, A. B. Sherman.

Barnard Pl., near Barnard St., dwell., 15′ x 26′; owner, Mrs. C. Jackson; builder, A. B. Sherman.

Blue Hill Ave., cor. Private Way, dwell. and store, 24′ x 33′; owner, Thomas Mulhern; builder, W. V. Tent.

Rand St., s, dwell. and store, 24′ x 33′; owner, Thomas Mulhern; builder, W. V. Tent.

Private Way, from Blue Hill Ave., dwell. and store, 23′ x 33′; owner, Thomas Mulhern; builder, W. V. Tent.

Rand St., s, 2 dwells. and stores, 23′ x 33′; owner, Thos. Mulhern; builder, W. V. Tent.

Tremont St., No. 1159, storage, 10′ x 21′; owner, and builder s, Hayward & Co.

Ashley Ave., near Ford Ave., dwell., 24′ x 30′; owner, Thomas Murray; builder, Thomas Yermans.

Brooklyn.

BUILDING PERMITS.—*Fourteenth St.*, s s, 97′ 10″ w Sixth Ave., 9 two-st'y frame (brick-filled) dwells., tin roofs; cost, each, $2,500; owners and builders, John Walters & Son, 375 Pacific St.

Suydam St., s s, 319′ 11″ e Myrtle Ave., 2 three-st'y frame tenements (brick-filled) tin roofs; cost, each, $4,000; owner and builder, George Straub, 11 Lewis Ave.; architect, Th. Engelhardt.

Monroe St., s s, 300′ w Ralph Ave., 3 two-st'y brick dwells., tin roofs; cost, total, $9,975; owner, B. A. Demill, Sumpter St., cor. Stone Ave.; architect, F. Holmberg; builder, F. Stemler.

Atlantic Ave., n s, 50′ w Nostrand Ave., 4 two-st'y brick dwells., tin roofs; cost, total, $8,000; owner, J. J. Drake, 397 Fulton St.; architect and builder, J. N. Smith.

Bergen St., s s, 80′ e Franklin Ave., two-st'y brick stable, gravel roof, iron cornice; cost, $2,500; owner, O. B. McAveney, 992 Bergen St.; architect, W. H. Hazzard's Sons.

Sumpter St., n w cor. Howard Ave., two-st'y frame (brick-filled) store and dwell., tin roof; cost, $3,000; owner, J. V. Hasseln, Marion St.; architects and contractors, Ames & Waldron; mason, E. Sutterlin.

Seventeenth St., n s, 225′ e Fourth Ave., three-st'y brown-stone dwell., tin roof; cost, $8,700; owner, W. H. Williams, 607 Third Ave.; builder, Geo. Ingram.

Fulton St., s s, 280′ e Howard Ave., three-st'y brown-stone store and dwell., gravel roof; cost, $6,000; owner, Th. Donohue; architect, B. T. Robbins.

Fulton St., s s, 40′ e Howard Ave., 9 brown-stone dwells., 8 three-st'y and 1 two-st'y, gravel roofs; cost, each, $6,000 and $4,500 for 1; owner and architect, Benj. T. Robbins, Northport, L. I.; builder, E. K. Robbins.

Moffat St., s s, 150′ e Knickerbocker Ave., two-st'y frame (brick-filled) dwell., tin roof; cost, $2,600; owner, John Morrow, 1279 De Kalb Ave.; architect, H. Vollweiler.

Fayette St., No. 19, n s, near Broadway; three-st'y frame store and tenement, tin roof; cost, $4,200; owner, Jacob Kraus, 19 Fayette St.; architect, H. Vollweiler.

Elm St., s s, 120′ e Broadway, three-st'y frame (brick-filled) flat, tin roof; cost, $4,000; owner, architect and builder, H. Vollweiler, 788 Broadway.

Debevoise St., s s, 44′ w Morrell St., three-st'y frame (brick-filled) tenement, tin roof; cost, $4,000; owner, John Wegeman, 100 Debevoise St.; architect, H. Vollweiler.

Park Ave., s s, 90′ e Nostrand Ave., three-st'y frame factory, tin roof; cost, $11,500; owner, Thos. W. Hynes, Flatbush; architect, T. F. Houghton; builders, S. H. O'Rourke and D. Ryan.

Willoughby Ave., s w cor. Hall St., 5 three-st'y brown-stone dwells., tin roofs; cost, each, $4,500; owner and builder, Henry L. Coe, 535 Washington Ave.; architect, A. Hill.

Vanderbilt Ave., No. 32, three-st'y brick tenement, tin roof; cost, $5,500; owner, Mrs. Newton, 32 Vanderbilt Ave.; architect, W. M. Coots; masons, Assip & Buckley.

Hart St., s s, 100′ w Marcy Ave., 4 two-and-a-half-st'y brown-stone dwells., tin roofs; cost, each, $5,000; owner and builder, Thomas E. Greenland, 256 Kosciusko St.; architect, I. D. Reynolds.

Concord St., s e cor. Liberty st., four-st'y brick laundry, tin roof; cost, $30,000; owner, J. P. Traffe, 202 Fulton St.; architect, C. F. Eisenach; builders, T. B. Rutan and W. Zang.

Union Ave., w s, 50′ s Grand St., four-st'y brick store and tenement, tin roof; cost, $10,000; owner, L. Wintgen; builders, J. Rodwell and S. Hough.

Dean St., s s, 200′ w Vanderbilt Ave., two-st'y brick factory, tin roof; cost, $3,000; owners, H. Humbert & Co.; architect, R. Dixon; builder, J. Gordon.

Water St., near Fulton St., on Bridge property, two-st'y brick station, slate roof; cost, $7,000; owner, Brooklyn Elevated Railroad, 49 Fulton St.; architect, J. Mumford; builders, T. B. Rutan and E. Snedeker.

Gates Ave., n s, 25′ e Marcy Ave., three-st'y brick store, tin roof; cost, $6,700; owner, John Canabez, Marcy and Gates Aves.; architect, I. D. Reynolds; builders, J. Rickard and T. Donnelly.

Decatur St., s s, 40′ e Sumner Ave., 2 three-st'y brown-stone dwells., tin roofs; cost, $14,000; owner, J. M. Brown, 527 Quincy St.; architect, A. Hill.

Marion St., s s, 125′ e Howard Ave., two-st'y frame (brick-filled) dwell., tin roof; cost, $5,000; owner, Charles Schmitt, 188 Marion St.; builders, J. Pirrung and C. Horn.

Fourth Ave., e s, 25′ s Twelfth St., two-st'y brick stable, gravel roof; cost, $3,500; owners and masons, Assip & Buckley; architect, W. M. Coots.

Seventh Ave., n e cor. Tenth St., 2 three-st'y brown-stone stores and dwells., tin roofs; cost, total, $12,000; owner, J. Nickenig; architect, R. Dixon; builder, L. Bonnard.

Union St., s s, 150′ w Bond St., three-st'y brick dwell., tin roof; cost, $6,000; owner and architect, William Clemens, 438 Union St.

Hicks St., No. 475, e s, 275′ s Harrison St., four-st'y brick tenement, tin roof; cost, $10,000; owner, N. H. Frost, 41 Remsen St.; architects, W. H. Hazzard's Sons.

Bedford Ave., w s, 62′ n Lexington Ave., 2 five-st'y brick tenements and stores, tin roofs; cost, abt. $25,000; owner, J. M. Horton Ice Cream Co., 453 Fulton St.; architect, F. E. Lockwood.

ALTERATION.—*Bedford Ave., No.* 599, new plastering and repair damage by fire; cost, $7,000; owner, architect and builder, Thomas H. Brush, 128 Flatbush Ave.

Chicago.

BUILDING PERMITS.—M. McGinnis, 3 two-st'y dwells., 997-1001 West Harrison St.; cost, $6,000; Stripleman, architect.

N. Lutz, two-st'y dwell., 857 Thirty-fourth St., cost, $2,700.

J. Tobison, three-st'y stores and flats, 2837-2839 Cottage Grove Ave.; cost, $12,000; architect, J. M. Vanosdel.

G. F. Fricke, two-st'y dwell., 3747 Walnut St.; cost, $4,500; architect, F. Ahlschlager.

J. D. Vorak, three-st'y flats, 484 Jefferson St.; cost, $5,000.

F. Suva, three st'y flats, 32 O'Brion St.; cost, $4,300.

A. Mulinke, two-st'y dwell., 432 Lincoln Ave.; cost, $2,700.

H. M. Fox, two-st'y dwell., 3763 Ellis Ave.; cost, $3,000; architect, L. B. Dixon.

W. G. Jackson, two-st'y dwell., 937 West Adams St.; cost, $8,000.

A. D. Coleman, two-st'y addition, 2738 Portland Ave.; cost, $3,700.

L. Schutt, two-st'y flats, 119 Seminary Ave.; cost, $3,000.

O. H. Niedner, cottage, 388 West Division St.; cost, $3,400.

C. Sheer, 2 three-st'y dwells., 3406-3408 State St.; cost, $7,000; architects, Thomas & Rodger.

A. Kuh, two-st'y dwell., 3142 Michigan Ave.; cost, $10,000; architects, Adler & Sullivan.

J. Long, two-st'y flats, 351 Lincoln Ave.; cost, $4,500.

Wm. Sims, two-st'y flats, 1142 Taylor St.; cost, $2,800.

O. C. Walcott, three-st'y dwell., 3831 Vincennes Ave.; cost, $3,000.

H. Sweet, 3 two-st'y stores and flats, 1454-1456 Milwaukee Ave.; cost, $6,000; architect, C. Hulke.

P. Powers, two-st'y flats, 346 Polk St.; cost, $3,500; architect, N. Provost.

M. W. Carter, two-st'y barn and milk depot, 444-446 Adams St.; cost, $3,000.

G. A. Webb, two-st'y dwell., 978 Wilcox Ave.; cost, $3,000; architect, G. A. Webb.

J. Plamondon, three-st'y flats, 461 Wood St.; cost, $3,500; architect, J. L. Leban.

T. Brennan, two-st'y dwell., 634 Ashland Ave.; cost, $3,500; architect, J. J. Flanders.

W. C. Seipp, two-st'y dwell., 2958 Groveland Ave.; cost, $6,000, architect, C. Cudell.

M. Laux, three-st'y flats, 39 Delaware Pl.; cost, $5,000; architect, J. Huber.

T. W. Wolff, shop, 302-306 Hawthorne Ave.; cost, $3,000.

F. Greenwald, two-st'y store and dwell., 183 West North Ave.; cost, $2,900.

H. Schell, three-st'y store and flats, Wentworth Ave.; cost, $8,000.

J. E. Taylor, two-st'y dwell., 2954 Calumet Ave.; cost, $18,000.

M. C. Dobbin, one-st'y addition, 267-273 Twentieth St.; cost, $3,000.

Chicago City Railroad Co., Thirty-ninth and Cottage Grove Ave.; cost, $6,000.

N. Busch, elevator, Cherry St.; cost, $12,000.

F. Furlong, two-st'y store and flats, 502 Austin Ave.; cost, $2,800.

J. H. Blair, two-st'y flats, 470 Carroll Ave.; cost, $3,500; architect, J. H. Blair.

Mrs. A. Miller, dwell., 582 Sedgwick St.; cost, $6,000; architect, F. Berlin.

A. J. Doyle, two-st'y dwell., 500 West Jackson St.; cost, $5,500.

J. Lindahl, two-st'y flats, 451 Dayton St.; cost, $7,000; architect, Strippleman.

Mrs. M. G. Claney, two-st'y dwell., 3244 Vernon Ave.; cost, $4,000; architect, R. Ray.

Mrs. R. Coriett, two-st'y flats, 1008 Halsted St.; cost, $3,000.

P. O'Donnell, remodel church; cost, $10,000.

R. Herbert, two-st'y dwell., 183 Fremont St.; cost, $2,700.

Phœnix Distillery Co., four-st'y distillery, Clybourne Ave.; cost, $18,000; architect, P. J. Killen.

Dr. M. W. Cortley, 2 two-st'y dwells., 295-297 Centre Ave.; cost, $6,000.

J. Hoffman, three-st'y stores and dwells., 464-470 Ogden Ave.; cost, $17,000; architect, A. Smith.

C. L. Jenks, 8 three-st'y dwells., Clark St.; cost, $37,000; architect, J. Spyer.

T. Raymond, 3 three-st'y dwells., 303 and 305 Indiana St.; cost, $11,000; architect, E. M. Branch.

Cincinnati.

BUILDING PERMITS.—William Schubert, Jr., brick building, Sumner and Gest Sts.; cost, $4,000.

Mr. Toharke, three-and-a-half-st'y brick building, Flint and Dalton Sts.; cost, $9,000.

G. H. Plump, two-st'y brick building, Vine and Mulberry Sts.; cost, $2,750.

Wm. H. Stewart Sons, three-st'y stone building, Seventh and Walnut Sts.; cost, $4,186.50.

G. W. Vaughan, three-st'y brick building, McMillan and Kemper Lane; cost, $7,000.

B. Barr, two-st'y frame building, Hibby and Wayne Sts.; cost, $2,500.

S. Frey Sons, two-st'y brick building, Colrain Pike and Queen City Sts.; cost, $4,000.

Henry Weiman, four-st'y brick warehouse, Pearl and Plum Sts.; cost, $3,000.

D. Fischer, two-st'y brick building, Colrain Pike and Straight St.; cost, $3,000.

Steinman & Meyer, four-st'y brick building, Sixth and Linn Sts.; cost, $5,500.

H. Robinson & Co., two-st'y frame buildings, State and Liberty Sts.; cost, $3,000.

Jno. H. Meyer, two-st'y frame buildings, Glenway Ave. and Gest St.; cost, $3,000.

Permits to date, 664.

Total cost of repairs, $137,201.50.

Kansas City, Mo.

BUILDING PERMITS.—William Long, three-st'y business block, 10, 12 and 14 Missouri Ave.; cost, $20,000.

Norton & Beatty, block of 6 cut-stone front houses, 1301, 1303, 1305, 1307, 1309 and 1311 East Fifteenth St.; cost, $25,000.

Almira Hayes, brick business house and dwell., cor. Forest and Independence Aves.; cost, $8,000.

James L. Withrow, brick block, East Fourteenth St.; cost, $16,000.

Edward Duffy, brick block, cor. of Fifth and Tracy Sts.; cost, $3,500.

Alice Robinson, brick house, cor. Sixth and Harrison Sts.; cost, $5,000.

A. L. Mason, five-st'y brick and cut-stone business block, 50′ x 112′, 1207, 1209 and 1211 Main St.; cost, $77,000.

Minneapolis, Minn.

BUILDING PERMITS.—Wm. Buchlen, two-st'y wood dwell., n s Irving Ave., bet. Third Ave. and Sixth Ave., n; cost, $8,000.

Island Power Company, alteration stone factory, Nicollet Island; cost, $9,000.

J. H. Rowell & Co., two-st'y wood dwell., w s Garfield Ave., bet. Lake St. and East Thirty-first St.; cost, $4,800.

Frank Holmes, two-st'y stone veneer dwell., n e s Thirteenth St., bet. Hennepin and Hawthorne Aves.; cost, $15,000.

City of Minneapolis, two-st'y brick engine-house, s cor. Seventh Ave. and Eighth St.; cost, $9,000.

New York.

CITY WORK.—Comptroller Loew has returned about 100 contracts to the Commissioner of Public Works without his approval of sureties, as by the late amendment of the constitution no money can be appropriated for payment of work for city improvement during the present fiscal year.

HOUSES.—For the Manhattan Construction Co., 14 three-and-four-st'y houses, brick, stone and terra-cotta fronts, are to be built on the n s Sixty-third St., bet. Ninth and Tenth Aves.; from plans of Mr. Wm. B. Tuthill.

On the s e cor. One Hundred and Twenty-sixth St. and Eighth Ave., 6 three-st'y and basement dwells., of brick, stone and terra-cotta, are to be erected for the Nassau Building Co., at a cost of about $60,000; from designs of Mr. A. I. Finkle.

On One Hundred St. and Riverside Ave., a house 56′ x 100′, is to be built for Mr. Peter Doelger; from plans of Mr. Wm. Shickel.

Herter Bros. have filed plans for 9 four-st'y brick houses and stores on Avenue A, bet. Seventy-ninth and Eightieth Sts., for Francis T. Schnugg; cost, $130,000.

BUILDING PERMITS.—*Clinton St., No.* 131, five-st'y brick tenement, tin roof; cost, $18,000; owner, Tobias Krakower & Co., 86 Attorney St.; architect, Chas. Rentz.

Fifteenth St., s s, 56′ e Avenue A, five-st'y brick tenement with store, tin roof; cost, $6,000; owner, Ph. Deffaa, 539 Sixth St.; architect, Wm. Graul.

West Fifty-first St., No. 542, five-st'y brick (stone front) tenement, tin roof; cost, $20,000; owners, Huston Bros. on premises; architect, C. A. French.

Sixth Ave., n w cor. Fifty-second St., 3 five-st'y and attic brick flats with stores, tin roofs; cost, total, $50,000; owner, Peter Doelger, 405 East Fifty-fifth St.; architect, J. Kastner.

East Eightieth St., No. 2, four-st'y brick dwell., mansard roof of slate, iron and tin; cost, $50,000; owner, Mrs. Sarah Weissman, 679 Broadway; architects, A. Zucker & Co.

Eighty-fifth St., n s, 98′ e Avenue A, five-st'y brick tenement, tin roof; cost, $18,000; owner, M. Schneider, 419 East Eighty-first St.; architect, J. Kastner.

Eighty-eighth St., s w cor. Lexington Ave., stone front church, peak roof slated; cost, $78,000; owners, Trustees of the German Evangelical Lutheran Immanuel Congregation, present church Eighty-seventh St., bet. Third and Lexington Aves.; architect, Arthur Crooks; builders, J. D. Murphy and James Thompson.

One Hundred and Fifth St., n s, 145′ e Lexington Ave., 3 five-st'y brick tenements, tin roofs; cost, each, $14,000; owner, M. H. Schneider, 419 East Eighty-first St.; architect, J. Kastner.

One Hundred and Fifth St., n s, 182′ Lexington Ave., two-st'y brick stable, tin roof; cost, $5,000; owner and architect, same as last.

One Hundred and Fifteenth St., s s, 80′ w Second Ave., four-st'y brick (stone front) flat, tin roof; cost, $12,000; owner and builder, John Walker, 233 East One Hundred and Thirteenth St.; architect, J. H. Valentine.

East Eighty-fourth St., No. 5, five-st'y brick flat, tin roof; cost, $25,000; owner, Augustin Walsh, 3 East Eighty-fourth St.; architect, Wm. Schickel.

First Ave., 1708 *and* 1710, 2 five-st'y brick tenements with stores, tin roofs; cost, each, $13,000; owner, Peter J. Uihlein, 355 East Eighty-seventh St.; architect, John Brandt.

Seventy-eighth St., n s, 250′ w Ninth Ave., 2 four-st'y brick dwells.; and 4 three-st'y brick dwells., tin and iron roofs; cost, 2 each, $18,000, and 4 each, $14,000; owner, B. S. Levy, 110 East Seventy-fourth St.; architect, R. Guastivino.

One Hundred and Fourth St., s w cor. Tenth Ave., three-st'y brick home, slate and tin roof; cost, $57,000; owner, Home for the Relief of the Destitute Blind, C. H. Leland, President; architect, F. Carles Merry; builder, J. J. Burchell.

One Hundred and Twenty-third St., n s, 100′ e Morningside Ave., 10 three-st'y brick dwells., deck roof tinned, mansard slated; cost, total, $95,000; owners, Keller & Tilford, 123 West Forty-seventh St.; architect, M. Louis Ungrich; builder, not selected.

Sixty-eighth St., s e cor. Ninth Ave., five-st'y brick tenement, tin roof; cost, $26,000; owner, David B. Algie, 432 West Fifty-seventh St.; architects, Thom & Wilson.

Sixty-eighth St., s s, 25′ e Ninth Ave., 6 four-st'y and basement brick (stone front) dwells., tin roofs; cost, each, $18,000; owner, etc., same as last.

One Hundred and Sixty-first St., n s, 78′ w Tenth Ave., two-st'y brick dwell., tin roof; cost, $4,000; owner, Thomas Fenton, Tenth Ave., cor. One Hundred and Sixty-first St.

One Hundred and Fifty-first St., n s, 275′ w Courtlandt Ave., two-st'y frame dwell. with brick basement, tin roofs, Schmidt & Garvin, builders; cost, $4,000; owner, Christina Ludwig, 677′ e One Hundred and Fifty-second St.; architects, Kramer Bros.

Washington Ave., e s, abt. 200′ s One Hundred and Seventy-sixth St., 2 two-st'y and attic frame dwells., cost, $3,500; owner, Annie H. O'Brien, 1839 Bathgate Ave.; architect, J. E. Kerby.

Washington Ave., w s, 135′ n One Hundred and Seventy-seventh St., three-st'y frame dwell., tin roof; cost, $3,000; owner, E. H. Flink, 1931 Washington Ave.; architect, C. S. Clark.

Tenth Ave., w s, 76′ n One Hundred and Fourth St., 2 five-st'y brick tenements, flat tin roof; cost, each, $20,000; owner, Franklin Thurston, 62 East One Hundred and Thirty-third St.; architect, Theo. Thomson, n e cor. Eighth Ave. and One Hundred and Twenty-fifth St.

Broadway, Nos. 1424 *and* 1426, seven-st'y brick flat, brick and stone front, flat tin roof; cost, $110,000; owner, Daniel S. McElroy, 246 Lexington Ave.; architect, F. T. Camp, 60 Liberty St.

West Fortieth St., Nos. 623 *to* 627, three-st'y brick building, flat roof covered with gravel to be used as a slaughter-house; cost, $22,000; owner, Jerome F. Sadler, Sturtevant House, N. Y.; architects, Arford & Cramer, 333 Paroma, Jersey City, N. J.

Sixth Ave., n w cor. Fifty-second St., 3 five-st'y brick tenements, flat tin roof; total cost, $50,000; owner, Peter Doelger, 405 East Fifty-fifth St.; architect, J. Kastner, 744 Broadway.

Barclay St., No. 71, brick store building, flat tin roof; cost, $7,000; owner, Estate Geo. W. Welch, cor. Greenwich St. and Park Pl.; architect, James E. Ware, 239 Broadway.

One Hundred and Twentieth St., n s, 95′ e Second Ave., 2 three-st'y and basement brick dwells., flat tin roof, brown-stone front; cost, each, $6,000; owner, John W. McSorly, 305 East One Hundred and Twentieth St.; architects, Cleverdon & Putzell, 110 East One Hundred and Twenty-fifth St.

Twelfth Ave., n e cor. One Hundred and Thirty-second St., two-st'y, store-house and refrigerator brick building, peak tin roof; owner, Thomas H. Wheeler, 448 West Thirty-fourth St.; architect, Joseph W. Norton, 403 West One Hundred and Twenty-sixth St.

East Thirteenth St., Nos. 515 *and* 517, 2 five-st'y brick tenements, flat tin roofs; cost, each, $15,000; owner, John A. Fay, 115 Second Ave.; architect, J. Kastner, 744 Broadway.

East One Hundred and Thirty-fifth St., No. 528, four-st'y brick tenement house, flat tin roof; cost, $10,000; owner, Gottlieb Frick, 168 Lincoln Ave., architect, W. Thomas Beers, 429 East One Hundred and Twenty-second St.

East One Hundred and Forty-third St., No. 634, three-st'y and basement brick dwell., flat tin or gravel roof; cost, $10,000; owner, Samuel F. Pease, 710 East One Hundred and Forty-third St.; architect, John Anderson, 718 East One Hundred and Forty-third St.

One Hundred and Twenty-third St., s s, 100′ e Ninth Ave., 11 three-st'y and basement brick dwells., brown-stone front, flat tin roof; cost, each, $14,000; owners, J. W. & A. A. Tiets, 208 West One Hundred and Twenty-fifth St.; architect, J. H. Valentine, 108 East One Hundred and Twenty-fifth St.

Grand St., No. 225, five-st'y brick building, brick and stone front, flat roof covered with gravel; cost, $16,500; owner, Thomas S. Olleve, 107 East Sixtieth St.; architect, E. Sniffen, 317 Broadway.

Highbridge Road, 450′ e Jerome Ave. (Fordham), three-st'y wood dwell., slate roof; cost, $6,000; owner, Mrs. Aurelia Murray, Fordham; architects, C. V. Folin & Son, Fordham.

Jerome Ave., n e cor. Kingsbridge Road, two-st'y frame and brick dwell., wood front, peak tin roof; cost, $5,250; owner, John D. Armstrong, Fordham; architects, C. V. Folin & Son, Fordham.

East One Hundred and Fifty-sixth St., No. 663, two-st'y and basement brick and frame building; flat tin roof; cost, $3,200; owner, Theodore Housman, 659 East One Hundred and Fifty-sixth St.; architect, Edward Stichler, 551 East One Hundred and Fifty-fourth St.

Ninth Ave., n w cor. Twentieth St., four-st'y brick dwell., peak and flat roof covered with slate and tin; cost, $30,000; owner, General Theological Seminary, 409 West Twentieth St.; architect, Chas. C. Haight, 111 Broadway.

East Fifteenth St., No. 7, five-st'y brick building, brown-stone front, peak and flat roof, terra-cotta plates and tin roofs; cost, $100,000; owners, Young Men's Christian Association, 6 East Twelfth St.; architect, R. H. Robertson, 121 East Twenty-third St.

ALTERATIONS.—*First Ave., Nos.* 1641 *and* 1643, store front, iron columns, etc.; cost, $4,000; owner, Sophia Roberts, 206 Second Ave.; architects, Schwarzmann & Buchman.

Avenue A, No. 242, four-st'y brick extension, tin roof, also new store front; cost, $3,500; owner, Philip Deffaa, 539 Sixth St.; architect, W. Graul.

Greenwich St., Nos. 170 *to* 174, chimney built upon or raised; cost, $5,000; owner and builder, New York Steam Co., 22 Courtland St.; architect, C. E. Emery.

Seventh Ave., s e cor. Fifty-first St., four-st'y brick extension, felt and gravel roof; cost, $5,000; owners, Broadway & Seventh Ave. R.R. Co.; architect, S. D. Hatch.

Fiftieth St., n s, 197′ e Seventh Ave., new st'y to be added to two-st'y brick building, flat roof making same three-st'y, used as a blacksmith shop; cost, $5,000; owner, Broadway and Seventh Ave. R. R., Fiftieth St., cor. Sixth and Seventh Aves.; architect, Stephen D. Hatch, 115 Broadway.

Kingsbridge Road, 308′ w Webster Ave., an extension to two-st'y wood dwell., peak roof, slate and tin; cost, $2,500; owner, P. J. Keary, 78 East Eighty-first St.; architect, Geo. H. Budlany, White Plains.

West Fifty-third St., general internal alterations to four-st'y brick dwell., flat roof; cost, $3,000; owner, Sidney Dillon, 5 West Fifty-seventh St.; architect, Manley N. Cutter, 160 Broadway.

St. Marks Pl., No. 17, general internal alteration to four-st'y brick and marble building, peak roof; cost, $3,000; owner, Rev. Jacob Freshman, 25 West Seventh St.; mason, G. H. Williams, 2 West Fourteenth St.

Broadway, s w cor. Twenty-ninth St., internal alterations to galleries of theatre peak tin roof; cost, $5,000; lessee, Geo. C. Brotherton, Philadelphia; architect, Henry J. Dudley, 1300 Broadway.

East Broadway, No. 58, extension and new st'y on two-st'y brick building, flat tin roof; cost, $4,000; lessee, David Cohen, 56 East Broadway; architect, Wm. Graul, 12 Stanton St.

Philadelphia.

BUILDING PERMITS.—*Parrish St.*, cor. Holly St., 2 three-st'y dwells.; Louis C. Smith, owner.

Firth St., w Eighth St., 2 three-st'y dwells.; Thos. Battely, owner.

Firth St., w Eighth St., 2 two-st'y stables; Thos. Battely, owner.

Richmond St., cor. Vienna St., two-st'y dwell.; Thos. McCaulley, contractor.

Chester Ave., cor. Springfield St., 2 three-st'y dwells.; Thos. D. Antrim, owner.

Denmark St., w Front St., 2 two-st'y dwells.; Jno. M. Creane, contractor.

Fernon St., e Nineteenth St., 10 two-st'y dwells.; Thos. Grimman, owner.

South Fifteenth St., No. 730, three-st'y dwell., 16′ x 85′; Robt. Lamona, owner.

Delaware Ave., n South St., ferry-house, 77′ x 86′; Kaignspoint Ferry Co.

Hope St., Nos. 2131 *and* 2133, 2 two-st'y dwells., 17′ x 30′; Wm. Bartholomew, contractor.

Kohl St., w Trenton Ave., two-st'y dwell., 21′ x 28′; Wm. Bartholomew, contractor.

Hartwell St., w Kensington St., 3 two-st'y dwells., 16′ x 45′; Jos. Hamilton, owner.

Wishart St., n s, w Frankford Road, 2 two-st'y dwells., 15′ x 30′; Jos. McNutt, contractor.

Snyder Ave., e Thirteenth St., 2 two-st'y dwells., 16′ x 40′; M. Whelan, contractor.

South Eighth St., No. 754, three-st'y dwell., 17′ x 45′; A. Lagomarsine, owner.

Ann St., No. 153, two-st'y dwell., 14′ x 30′; S. Hein, owner.

Catharine St., e Front St., two-st'y dwell., 15′ x 40′; J. P. McGougal, owner.

Alaska St., w Fifth St., 3 two-st'y dwells., 14′ x 30′; H. Sherlock, contractor.

Jefferson St., near Mercer St., 5 two-st'y dwells., 15′ x 35′; J. D. Caldwell, contractor.

Ludlow St., w Thirty-seventh St., stable and carriage-house; C. W. Budd, contractor.

St. Louis.

BUILDING PERMITS.—Seventy-five permits have been issued since our last report, nineteen of which are for unimportant frame houses. Of the rest, those worth $2,500 and over are as follows:—

S. A. Sharp, two-st'y frame dwell.; cost, $3,000; Alex. M. Kechnise, contractor.

Henry Waushaffe, two-st'y brick dwell.; cost, $3,500; Henry Waushaffe, contractor.

Mrs. Yellitch, two-st'y brick dwell.; cost, $3,200; J. B. Legg, architect; S. L. Jones, contractor.

J. Pichar, two-st'y brick dwell.; cost, $2,500; Wm. Ihlo, contractor.

Chas. F. May, 2 adjacent two-st'y brick dwells.; cost, $5,000; C. F. May, architect; sub-let.

P. B. Fenske, two-st'y brick dwell.; cost, $3,300; E. Janssen, architect; Wm. C. Popp, contractor.

Shattinger, two-st'y brick dwell.; cost, $5,000; E. Janssen, architect; Wm. C. Popp, contractor.

F. Coester, two-st'y brick dwell.; cost, $4,350; E. Janssen, architect; Wm. C. Popp, contractor.

C. Supp, three-and-a-half-st'y store and tenement; cost, $3,000; R. Doerste, contractor.

Alex. Duncan, one-st'y brick addition; cost, $5,000; J. B. Fitzgibbons, contractor.

Mrs. J. D. Edwards, two-st'y brick dwell.; cost, $6,000; J. W. Hertel, architect; Francisco & Farnum, contractors.

H. Niehaus, two-st'y brick store and tenement; cost, $5,000; H. Stauder, contractor.

M. Obermeyer, 2 adjacent two-st'y brick tenements; cost, $4,000; F. Giser, contractor.

G. Wollbrink, 2 adjacent two-st'y brick tenements; cost, $3,200; F. Giser, contractor.

J. Dummeyer, two-st'y brick dwell.; cost, $2,500; J. Dummeyer, contractor.

M. Slattery, 3 adjacent two-st'y brick tenements; cost, $5,000; Sanith, contractor.

Henry Miller, 2 adjacent two-st'y brick tenements; cost, $4,000; P. Riechers, contractor.

Henry Miller, 2 adjacent two-st'y brick tenements; cost, $4,000; P. Riechers, contractor.

George W. Monroe, 2 adjacent two-st'y brick dwells.; cost, $6,000; J. W. Hertel, architect; G. Kunch, contractor.

E. P. Dickson, 2 adjacent two-st'y brick dwells.; cost, $2,500; Dickson, contractor.

The American Architect and Building News.

PUBLISHED EVERY SATURDAY BY

TICKNOR & COMPANY,

211 TREMONT ST., BOSTON, MASS.,

For The American Architect and Building News Co.

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New Advertisements.

EAST BANGOR CONSOLIDATED SLATE CO. (East Bangor, Pa.), Slate. Page xiv.
BANGOR UNION-SLATE CO. (Bangor, Pa.), Slate. Page xiv.
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CAMBRIDGE ROOFING CO. (Cambridge, O.), Roofing Materials. Page xiv.
THE TAFT COMPANY (Hartford, Conn.), Wood Ornaments. Page ix.

To Whom it may Concern.

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BUILDING INTELLIGENCE

St. Louis. (*Continued.*)

E. P. Dickson, 2 adjacent two-st'y brick d e lls.; cost, $2,500; Dickson, contractor.
C. P. Jansen, 2 adjacent two st'y brick tenements; cost, $3,200; Wieden, contractor.

St. Paul.

BUILDING PERMITS.—Two-st'y frame dwell., n s Hancock St., bet. Moore & Wilder Sts.; cost, $2,400; owner, C. G. Kolff.
One-st'y brick boiler-house, n s Tenth St., bet. Minnesota and Robert Sts.; cost, $3,965; owner, Board of Education.
Two-st'y brick veneer store and dwell., s w cor. Como Ave.; cost, $2,300; owner, Alcis Meurer.

COMPETITION.

MEMORIAL TO GENERAL GRANT.

We offer three prizes of $50 each for the best three "preliminary sketches" of a design for a Memorial to General Grant, to be erected in a large town at a cost not exceeding $100,000.

Conditions: — Drawings to be received at this office **on or before Saturday, September 19, 1885.** Drawings to be at any scale in pencil or ink — no brush-work or color — the scale to be indicated on the drawing. A brief memorandum of material and probable cost to appear *on the drawing itself.*

Each design to be represented by perspective (or elevation) with plan, and, if necessary, section at smaller scale.

Each design to be signed by a motto, and the author's name forwarded under seal. In case of publication, the author's name will be announced, unless request is made to the contrary. The award will be made by a jury of architects and sculptors.

509 EDITORS OF THE "*American Architect.*"

PROPOSALS.

STONE AND BRICK WORK.
[At Louisville, Ky.]

OFFICE OF SUPERVISING ARCHITECT,
TREASURY DEPARTMENT,
WASHINGTON, D. C., September 7, 1885.

Sealed proposals will be received at this office **until 2 P. M., on the 12th day of October, 1885,** for all the stone and brick work required for the basement and area walls of the court-house, etc., building, at Louisville, Ky., in accordance with drawings and specification, copies of which and any additional information may be had on application at this office or the office of the superintendent.

Bids must be accompanied by a certified check for $1,000 for stone-work and $500 for brick-work.

M. E. BELL,
507 Supervising Architect.

STONE AND BRICK WORK.
[At Minneapolis, Minn.]

OFFICE OF SUPERVISING ARCHITECT,
TREASURY DEPARTMENT,
WASHINGTON, D. C., September 1, 1885.

Sealed proposals will be received at this office **until 2 P. M., on the 29th day of September, 1885,** for all the stone and brick work required for the basement and area walls of the post-office, etc., building at Minneapolis, Minn., in accordance with drawings and specification, copies of which and any additional information may be had on application at this office or the office of the superintendent.

Bids must be accompanied by a certified check for $1,000 for stone-work, and $500 for brick work.

M. E. BELL,
507 Supervising Architect.

STEAM-HEATING.
[At Leavenworth, Kans.]

THE NATIONAL HOME FOR DISABLED VOLUNTEER SOLDIERS,
LEAVENWORTH, KANS., August 26, 1885.

Sealed proposals will be received at the Planters House in this city, **until 12 o'clock, noon, Saturday, September 26, 1885,** for furnishing all material (except the boilers, which are to be furnished and delivered at the boiler-house), and setting the boilers in place, complete the steam-fitting, the steam-heating, the gas-fitting, the plumbing, and the sewer-pipes and connections required in the buildings, now being erected at the Home.

The bids must be made separately for each branch of the work, in a lump sum for each, but may be bid for also in a lump sum for the entire work.

Plans and specifications may be seen at the office of Carr & Grodavent, architects, Leavenworth, Kans.

The right is reserved to reject any or all bids.

GEN. W. B. FRANKLIN, President.
E. F. BROWN, Inspector-General. 508

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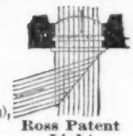

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The Fifty-Fourth Annual Exhibition
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Will open September 30, 1885. Heavy machinery will be received as early as September 14th, other goods September 21st. Intending exhibitors must make early application to secure proper space and classification. For blanks and information, address,
GENERAL SUPERINTENDENT.
American Institute, New York City.

PROPOSALS.

DAM AND BRIDGE.
[At Trenton, Ont.]

TRENTON, ONT., August 27, 1885.

Tenders will be received by the undersigned for the construction of the following works: —
Dam and bridge over Trent River.
Brick planing and moulding factory.
The contractor for dam to furnish everything except timber and lumber, which will be found by us. The contractor for brick factory to furnish labor only.
Plans and specifications at our office here.
The lowest or any tender not necessarily accepted.
Tenders will be **opened 15th day of September next.**

GILMOUR & CO.
507

DRILL-HALL.
[At Montreal, Can.]

DEPARTMENT OF PUBLIC WORKS,
OTTAWA, September 2, 1885.

Sealed tenders, addressed to the undersigned, and endorsed "Tender for Armories, Drill Hall, Montreal," will be received at this office **until Tuesday, the 15th day of September inst.,** inclusive, for the construction of armories at the Drill Hall, Montreal.

Plans and specifications can be seen at the Department of Public Works, Ottawa, and at the office of A. Raza, Esq., architect, Montreal, on and after Thursday, the 3d inst.

Tenders must be made on the printed forms supplied.

Each tender must be accompanied by an *accepted* bank check, made payable to the order of the Honorable the Minister of Public Works, *equal to five per cent* of the amount of the tender, which will be forfeited if the party decline to enter into a contract when called upon to do so, or if he fail to complete the work contracted for. If the tender be not accepted the check will be returned.

The Department will not be bound to accept the lowest or any tender.

By order, A. GOBEIL,
507 Secretary.

BRASS TUBES.

U. S. NAVY PAY OFFICE, September 1, 1885.

Proposals, in duplicate, sealed, and endorsed on envelope "Bids for Engineer's Supplies," will be received at this office from regular dealers or manufacturers only **until 12 o'clock, M., October 1, 1885,** for the following supplies, of best quality, to be delivered with twenty days from date of award, in the Mare Island Navy Yard, free of expense to the Government, and subject to the usual condition and inspection, viz.:

BUREAU OF STEAM-ENGINEERING.

Requisition No. 3, brass tubes.

Blank forms for proposals, and schedules for the articles required, will be furnished upon application at this office, and all necessary information at the Navy Yard.

Two responsible guarantees are required that a formal contract will be executed with bond for the prompt and faithful delivery of the articles awarded, and the competency of the guarantors certified to before a notary or other public officer.

The right is reserved to reject any or all bids that may not be deemed advantageous to the Government, and to waive defects. W. W. WILLIAMS,
Pay Director, U. S. Navy.

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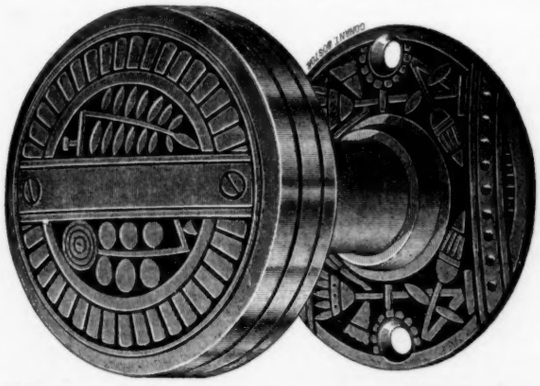

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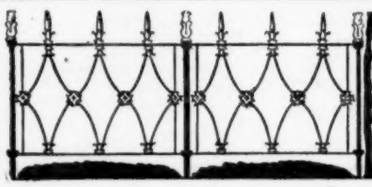

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1885 CATALOGUE NOW OUT.

PROPOSALS.

SEWER-PIPE. [At Cincinnati, O.]

CINCINNATI, August 25, 1885.

Sealed proposals will be received at the office of the undersigned, Room 23, Sinton Building, Fifth and Vine Sts., Cincinnati, O., **until 12 o'clock, M., of Tuesday, September 22, 1885,** for furnishing and delivering at Avondale, Hamilton Co., O., about

1,900 feet of 21-inch sewer-pipe.
1,900 feet of 24-inch sewer-pipe.
400 feet of 21-inch iron-pipe.

According to plans on file with the Clerk of the Board of Sewerage Commissioners. The Council reserves the right to reject any or all bids.

Bidder to indorse their names and address upon the outside of the envelopes containing their bids.

Each bid to be accompanied by two disinterested sureties.

Bidders to use the blank forms, as none others will be received.

Plans and specifications and forms of proposals can be obtained at the office of the undersigned, or at the office of Anderson & Hobby, 68 and 69 Johnston Building, Cincinnati, O.

By order of the Board of Sewerage Commissioners.

508 W. ELLWOOD WYNNE, Clerk.

SCHOOL-HOUSE ADDITION. [At Corryville, O.]

Sealed proposals will be received at the office of the Board of Education, Public Library Building, **until 12 o'clock, noon, Monday, September 14th, 1885,** for labor and material required for building a (3) room addition to the Twenty-third District School, Corryville, according to plans and specifications on file at the office Superintendent School Building, No. 287 West Ninth St., Cincinnati, O.

Bids must be upon blank forms, to be obtained at either office.

Each bid must contain the name of every person interested therein, and must be accompanied by a sufficient guarantee of some disinterested person in a penalty equal to the amount of the bid; that if the bid is accepted, a contract will be entered into, and the performance of it properly secured.

All bids must be addressed to George O. Deckebach, Chairman Building Committee, and plainly marked bid for Twenty-third District Improvement.

The right is reserved by the Board to reject any or all bids.

By order of the Board of Education.

507 ROBT. G. STEVENSON, Clerk.

ALTERATIONS. [At Oxford, O.]

Sealed proposals will be received by the Board of Trustees of the Miami University, **up to noon of the 17th day of September, 1885,** at the Secretary's office, University Building, in the village of Oxford, O., for material and labor required in the alteration and repairs of the Miami University Buildings, in accordance with plans and specifications by D. W. Gibbs & Co., Architects, now on file in the office of the Secretary.

Also, at same time and place, bids will be received by said Board of Trustees for the heating and ventilating of said University buildings, parties bidding to furnish complete plans showing system contemplated.

Each bid must be accompanied by a good and sufficient bond in the sum of $1,000, conditional that if awarded the work he or they will enter into contract and give bond for the faithful performance of the same.

The Board reserve the right to reject any or all bids.

By order of the Board of Trustees.

507 F. W. BISHOP, Secretary.

J.B.&J.M.CORNELL,

MANUFACTURERS OF

IRON

COLUMNS, LINTELS,

AND

GIRDERS,

DEALERS IN

BEAMS AND CHANNELS.

141 CENTRE ST., NEW YORK.

DECORATIONS. [At Lansing, Mich.]

LANSING, MICH., August 3, 1885.

Notice is hereby given that under the provisions of Act No. 140 of the session laws of 1885, designs and proposals for decorating the walls and corridors of the capitol at Lansing are solicited, and will be received by the secretary at the office of the Board of State Auditors **until 9 A. M., on Wednesday, September 30, next.** Bids may be made in the following manner, each to be accompanied by sketches or designs showing as clearly as may be the plan upon which the work is proposed to be finished:—

Bid No. 1 for Senate Chamber and House of Representatives.

Bid No. 2 for Supreme Court-room.

Bid No. 3 for rotunda and front corridor on first floor.

Bid No. 4 for Governor's reception room.

Bid No. 5 for all of above mentioned.

The whole amount to be expended on the work is limited to $23,000.

Each bid must be accompanied by a bond of the bidder or bidders to the people of the State of Michigan in the penal sum of one thousand dollars, to be approved by any member of the commission conditioned that if any contract be awarded to him or them, he or they will, within a reasonable time to be designated by said board, enter into an agreement with said board, and furnish a bond to be approved by said board conditioned for the prompt and faithful performance of the contract so awarded.

Blank form of both bids and bonds to accompany them, and the act of Legislature authorizing the work will be furnished on application to the secretary.

The board reserves the right to reject any and all bids or design.

R. A. ALGER, Chairman.

T. M. WILSON, Secretary. 508

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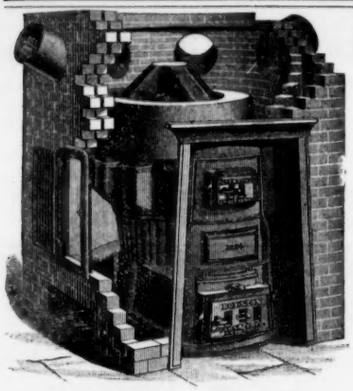

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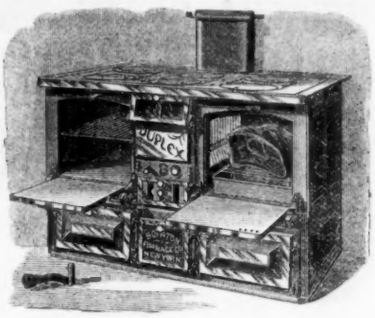

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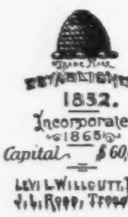

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Marquette, Mich., Nov. 21, 1884.

As regards the *Gilbertson's Old Method* that we bought of you, would say that it is first-class and works the same.

Gallatin, Tenn., Aug. 21, 1884.

I congratulate you on your success. I think you have outstripped your competitors.

Indianapolis, Ind., Oct. 22, 1884

Your *Old Method* Plate gives better satisfaction than any Redipped Tin I have ever worked.

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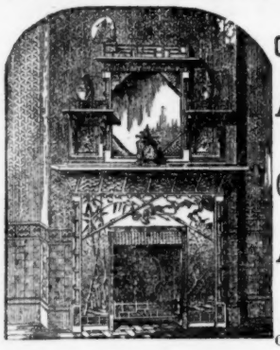

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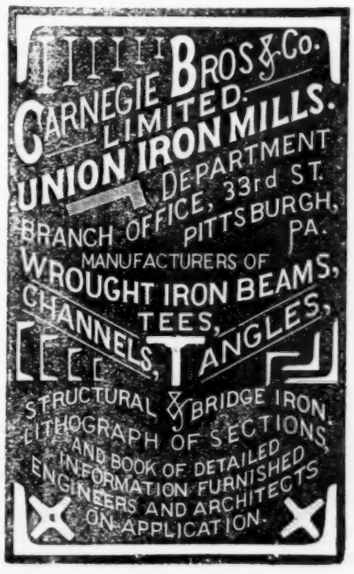

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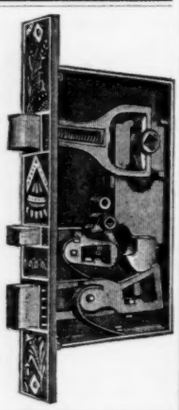

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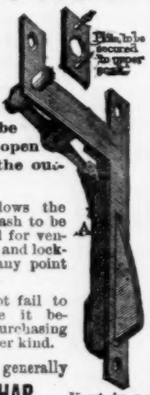

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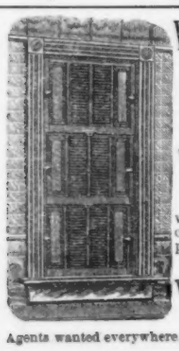

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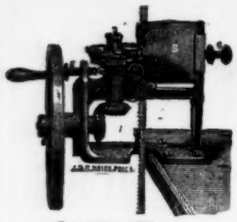

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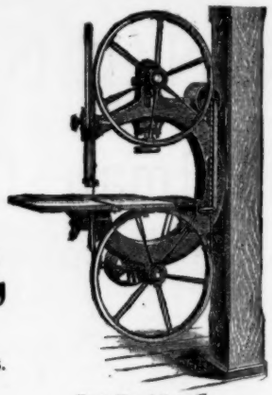

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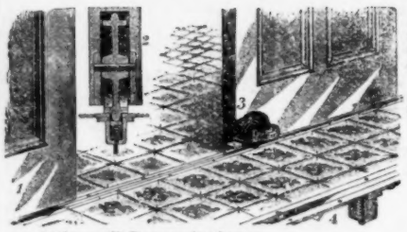

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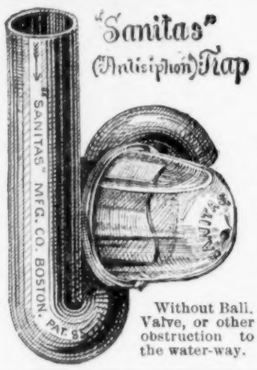

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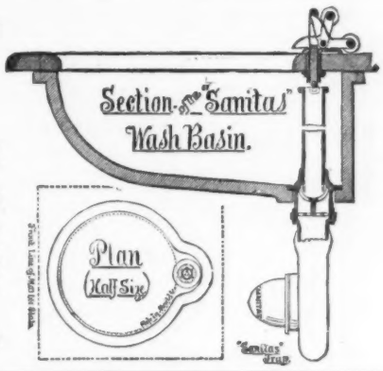

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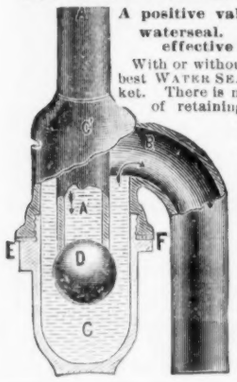

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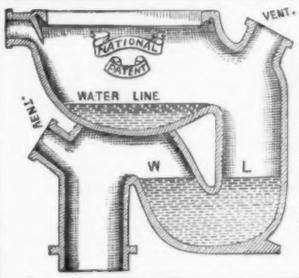

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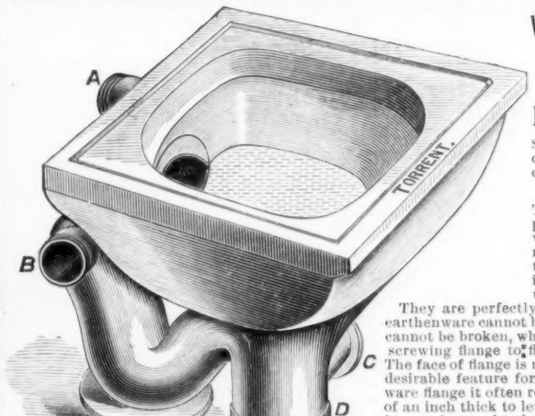

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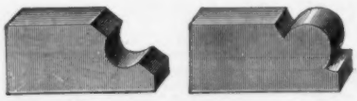

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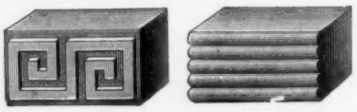

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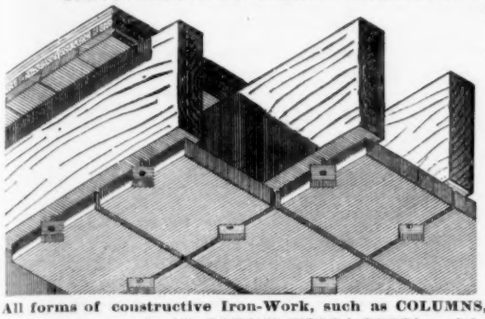

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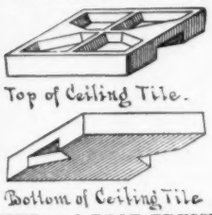

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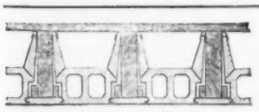

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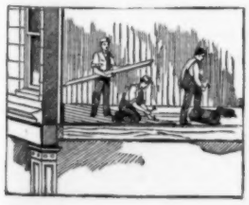

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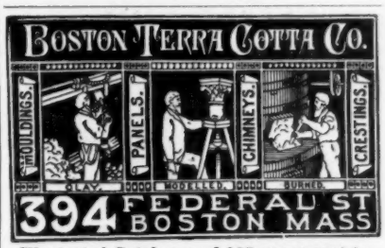

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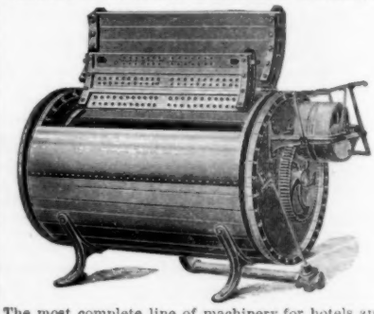

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